

Maryland Clean Marina GUIDEBOOK

A product of the Maryland Clean Marina Initiative

Prepared by
Maryland Department of Natural Resources
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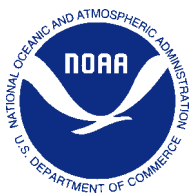
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Parris N. Glendening, Governor • Kathleen Kennedy Townsend, Lt. Governor
J. Charles Fox, Secretary • Karen M. White, Deputy Secretary



A Message from the Governor

Dear Friends:

A strong economy and a healthy environment are two of Maryland's most valuable assets. The Maryland Clean Marina Initiative, a public-private partnership coordinated by the Department of Natural Resources, fosters these objectives by disseminating information that will assist marina and boatyard operators in managing profitable businesses while protecting the quality of Maryland's waterways. This *Maryland Clean Marina Guidebook* contains practical, common sense tips for controlling pollutants associated with vessel operation, maintenance and storage, as well as a review of relevant environmental laws and regulations.

Through the Clean Marina Initiative, marina operators have an opportunity to be rewarded for their voluntary stewardship of clean water and fresh air. By working together, I am confident that the marine industry and the State of Maryland will be able to preserve the healthy, functioning ecosystems upon which our very livelihood depends.

Thank you for exploring this guide to pollution prevention practices for marinas, and for doing your part to help ensure that our environment is safe, clean, and preserved for future generations of Marylanders.

Sincerely,

A handwritten signature in black ink, reading "Parris N. Glendening". The signature is fluid and cursive, with a long, sweeping underline that extends to the right.

Parris N. Glendening
Governor

Foreword

The Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 require all coastal states to develop Coastal Nonpoint Source Programs to address polluted runoff within the coastal zone. Nonpoint source pollution is the name for the disparate droppings of our society. It is the grease from our cars, fertilizers from our fields, and exhaust from our lawn mowers. It also includes stormwater runoff from boatyards, drips from fuel docks, discharges from marine heads, and fish waste from recreational anglers.

In response to CZARA, the State of Maryland submitted a report describing Maryland's various laws, regulations, and programs that address nonpoint source pollution. After reviewing the report, the United States Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) released their findings in October of 1997. They determined that Maryland needed to do more to control nonpoint source pollution associated with marinas and boating.

With the release of these findings, Maryland was faced with the possibility of having to impose additional regulations on marinas. Fortunately, NOAA and EPA approved the Maryland Clean Marina Initiative as an alternative approach. In order to satisfy the federal agencies, Maryland must certify 25 percent of the State's boating facilities as Clean Marinas or Clean Marina Partners by 2004.

Maryland marinas have been given an opportunity to avoid regulation by voluntarily adopting pollution prevention practices. I urge all marina operators to embrace the challenge: to work with the Maryland Clean Marina Initiative to protect clean water and fresh air.

A handwritten signature in black ink, appearing to read "J. Charles Fox".

J. Charles Fox
Secretary
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Acknowledgments

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Drafts of the *Maryland Clean Marina Guidebook* were also reviewed by many additional subject area experts. Reviewers included Jennifer Pereira, BoatU.S./Clean Water Trust; Lee Ann Chandler, Critical Area Commission; Britt Slattery, U.S. Fish and Wildlife Service; Mary Ellen Setting, Maryland Department of Agriculture; and Cindy Tate, Anne Arundel County. The following people from the Maryland Department of the Environment commented on the *Guidebook*: Patsy Allen, Laura Armstrong, Rick Ayella, Bob Beasley, Brian Clevenger, Lori Del Pizzo, Andrew Der, Ed Gertler, Elder Ghigiarelli, Ed Hammerburg, Bec Hebler, Karen Irons, Lois McNamara, Nolan Penney, Ginny Sells, Greg Sonberg, and Ed Stone. Staff from the Maryland Department of Natural Resources also reviewed this document: David Burke, Ray Dintaman, Bob Ellsworth, Bob Gaudette, Barbara MacLeod, Frances McFaden, Donald O'Neill, and Jody Roesler.

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Acronyms

BMP	Best Management Practice
CFR	Code of Federal Regulations
COE	U.S. Army Corps of Engineers
COMAR	Code of Maryland Regulations
EPA	Environmental Protection Agency
DNR	Maryland Department of Natural Resources
CZARA	Coastal Zone Act Reauthorization Amendments of 1990
IDA	Intensely Developed Area
LDA	Limited Development Area
MDA	Maryland Department of Agriculture
MDE	Maryland Department of the Environment
MES	Maryland Environmental Service
MPPRCA	Marine Plastic Pollution Research and Control Act
MSD	Marine Sanitation Device
NDZ	No Discharge Zone
NOI	Notice of Intent
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PWC	Personal Water Craft
QAC	Quarternary Ammonium Compounds
RCA	Resource Conservation Area
RCRA	Resource Conservation and Recovery Act
SAV	Submerged Aquatic Vegetation
TCLP	Toxicity Characteristic Leaching Procedure
UL	Underwriters' Laboratories
UST	Underground Storage Tank
USC	United States Code
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

Introduction



The Maryland Clean Marina Initiative is an effort to assist marina and boatyard operators to protect the resources that provide their livelihood: clean water and fresh air. These natural assets are essential features of the boating industry. After all, many boaters are drawn to the water by nature's glory. They want to feel the sea rolling beneath them and the crisp air against their skin. They want to see fish running and birds diving. They want to be able to swim and crab without fear of disease. They want to test their mettle against a rising wind and to sit tranquilly at twilight. Ironically, it is the enjoyment of these natural wonders that may lead to their decline.

The maintenance, operation, and storage of recreational vessels has the potential to pollute adjacent waters and to impair air quality. Contaminants include dust from hull maintenance operations, solvents from engine repair shops, petroleum from careless fueling practices, sewage discharges from boats, and heavy metals from antifouling paints. These pollutants may be deposited directly into waterways or they may be carried in by stormwater runoff. Marina design and location may also contribute to environmental degradation by disturbing sensitive habitat areas.

This is not to say that marinas and boaters are the only contributors to environmental degradation. Quite the contrary is true. Water quality is impacted by fertilizers and pesticides applied by land owners (residential, commercial, and agricultural), by industrial discharges, and by our choices of home cleaning products. It is affected by sediment washed from cleared land and by stormwater runoff that collects oil and heavy metals deposited by our cars. Environmental degradation is not the result of any particular industry or user group. It is the consequence of all of our activities. As such, we all have an obligation to do what we can to minimize the negative environmental impacts of our actions. If we each take responsibility for that part of the problem which we can control— even if it seems insignificant—the cumulative result will be a cleaner, healthier environment.

By adopting the best management practices recommended throughout this *Guidebook*, you will demonstrate your commitment to environmental stewardship. You can be proud that you are doing your share to protect the natural resources upon which we all depend. Additionally, your marina or boatyard will be a safer, healthier place to work. You may be able to save money by reducing your costs for materials and for waste cleanup and disposal. You may increase your income by renting out equipment such as vacuum sanders and by selling recyclable materials such as batteries and scrap metal. Similarly, cleaner, more efficient equipment will increase your staff's productivity. Your liability associated with waste handling may also be reduced. And, your facility will be more attractive to those who care about the health of our water, land, and air.

The Maryland Clean Marina Initiative seeks to promote clean water and fresh air by providing technical advice and educational material to marina operators and boaters. The goal is to encourage informed decision making that leads to a reduction in boating-related pollution. The *Maryland Clean Marina Guidebook* provides an overview of actions that marine industry professionals can take to protect water and air quality. It is written for managers of full service marinas with boatyards. The recommendations contained within, however, are equally applicable to marinas with limited services, independent boatyards, and marine contractors. The *Guidebook* provides advice on the following topics:

- siting considerations for new or expanding marinas
- marina design and maintenance
- stormwater management
- vessel maintenance and repair
- petroleum control
- sewage handling
- waste containment and disposal
- marina management
- laws and regulations

Those marinas that adopt a significant proportion of the best management practices suggested within the *Guidebook* will be recognized as Maryland Clean Marinas. They will receive a certificate acknowledging their environmentally responsible actions, authorization to use the Maryland Clean Marina logo on their letterhead and in their advertising, a flag to fly from their property, and promotion by the Clean Marina Initiative in publications, on the world wide web, and at public events.

Now is the time to take a leadership role in protecting and enhancing the quality of Maryland's natural resources. Please, do your part.

How to Use this Guidebook

The *Maryland Clean Marina Guidebook* is intended to be used as a reference document. Refer to selected chapters as needed. For example, as you prepare for spring commissioning, review the recommendations in the *Vessel Maintenance and Repair* chapter.

As you read through the *Guidebook* you will find that recommendations are preceded by a diamond (◆), a broken diamond (❖), or an open diamond (◇). Solid diamonds identify legal requirements, broken diamonds precede highly recommended practices, and open diamonds indicate desirable activities.

Six *Clean Boating Tip Sheets* are included in the *Guidebook*. They address vessel cleaning and maintenance, bottom paint selection, underwater hull cleaning, petroleum control, vessel sewage, and waste containment and disposal. These tip sheets are meant to be photocopied and distributed to boaters. There is space on each sheet to include your marina's name and logo.



Helpful Hint

As you read through the Guidebook you will find that recommendations are preceded by a diamond (◆), a broken diamond (❖), or an open diamond (◇). Solid diamonds identify legal requirements, broken diamonds precede highly recommended practices, and open diamonds indicate desirable activities.

Throughout the book you will find references to additional sources of information. Contact information and brief descriptions of services offered by each authority are listed in *Appendix I*. Subsequent appendices contain information about local Critical Area Commissions, environmentally sensitive landscaping, recycling contacts, sample contract language, spill response companies, local economic development contacts, templates of commonly needed plans, waste gasoline haulers, and a training guide.

Siting Considerations for New and Expanding Marinas

Environmental Concerns

Legal Setting

- Critical Area Program
- Environmental Review
- State Tidal Wetlands Regulations
- United States Army Corps of Engineers

Site Selection Guidelines

- Redevelop Existing Sites
- Characterize Project Site
- Identify Rare and Endangered Species
- Avoid Submerged Aquatic Vegetation
- Minimize Disturbance to Wetlands
- Avoid Shellfish Beds
- Avoid Critical Migration, Nesting, and Spawning Periods
- Avoid Colonial Waterfowl Nesting and Staging Areas
- Avoid Geographic and Hydrographic Impediments
- Consider Bottom Configuration
- Follow Natural Channels

Information Sources

Marina Design and Maintenance

Environmental Concerns

Best Management Practices for Marina Facilities and Structures

- Use Fixed or Floating Piers to Enhance Water Circulation
- Use Environmentally Neutral Materials
- Limit Shaded Areas Over the Water
- Minimize the Need for Dredging
- Minimize the Impacts of Dredging
- Employ Nonstructural Shore Erosion Control Measures
- Conserve Water
- Maintain Structures Using Clean Marina Practices

Best Management Practices for Protecting Sensitive Areas

- Minimize Impervious Areas
- Use Upland and Inland Areas
- Expand Upward
- Conserve Sensitive Land
- Practice Water-wise Landscaping
- Adopt Integrated Pest Management Practices

Best Management Practices for Creating Habitat Areas

- Maintain and/or Develop Vegetated Areas
- Participate in Oyster Restoration Programs

Information Sources

Stormwater Management

Environmental Concerns

Legal Setting

- General Permit for Discharges from Marinas
- State Law: Sediment Control and Stormwater Management
- Critical Area Program

Best Management Practices to Control Stormwater Runoff

- Practice Low Impact Development
- Cultivate Vegetated Areas
- Minimize the Amount of Impervious Area
- Use Structural Controls as Necessary
- Control Sediment from Construction Sites
- Stencil Storm Drains

Information Sources

Vessel Maintenance and Repair

Environmental Concerns

Legal Setting

- General Permit for Discharges from Marinas
- Critical Area Program

Best Management Practices to Control Pollution from Vessel Maintenance and Repair Activities

- Designate Work Areas
- Contain Dust from Sanding
- Contain Debris from Blasting
- Minimize Impacts of Pressure Washing
- Minimize Impacts of Paints
- Minimize Impacts of Painting Operations
- Reduce Overspray
- Handle Solvents Carefully
- Repair and Maintain Engines with Care
- Winterize Safely
- Conduct In-Water Maintenance Wisely
- Educate Boaters

Information Sources

Petroleum Control

Environmental Concerns

Legal Setting

- Federal Water Pollution Control Act
- Maryland State Law

Best Management Practices for Preventing Spills at the Source

- Protect Petroleum Storage Tanks
- Avoid Waves and Wakes
- Maintain Transfer Equipment
- Install Environmental Controls at the Pump
- Supervise Fueling: Environmental Recommendations
- Supervise Fueling: Safety Recommendations
- Turn Down the Pressure
- Advocate the Use of Oil Absorbent Materials
- Provide an Oil/Water Separator
- Offer Spill-Proof Oil Changes
- Minimize Spills and Leaks from Machinery
- Educate Boaters

Best Management Practices for Emergency Planning

- Prepare a Spill Prevention, Control, and Countermeasure (SPCC) Plan
- Assess Hazards
- Develop Emergency Response Plans
- Make Plans Accessible
- Train Employees
- Share Your Emergency Response Plans
- Maintain Oil Spill Response Equipment
- Store Oil Spill Response Equipment Smartly
- Be Prepared for a Fire
- Maintain Material Safety Data Sheets
- File Tier Two Forms

Information Sources

Sewage Handling

Environmental Concerns

Legal Setting

- Marine Sanitation Devices
- Pumpout Stations
- No Discharge Zones

Best Management Practices to Control Sewage

- Install a Pumpout System
- Discourage Discharge from Type I and Type II MSDs at the Slip or Mooring
- Provide Shoreside Restrooms
- Design and Maintain Septic Systems to Protect Water Quality and Public Health
- Provide Facilities for Liveaboards
- Offer MSD Inspections
- Encourage Compliance
- Educate Boaters

Information Sources

Waste Containment and Disposal

Environmental Concerns

Legal Setting

- Marine Plastic Pollution Research and Control Act
- Resource Conservation and Recovery Act and State Hazardous Waste Laws

Best Management Practices to Properly Contain and Dispose of Waste

- Reduce Waste
- Control the Disposal of Fish Waste
- Manage Trash
- Recycle Whenever Possible
- Recycle Solid Waste
- Recycle Liquid Waste
- Minimize Your Use of Hazardous Products
- Store Solvents and Hazardous Materials with Care
- Follow Recommended Disposal Methods
- Track Pollution Incidents
- Educate Boaters

Information Sources

Pollution Report and Action Log

Marina Management

Staff Training

- Stormwater Pollution Prevention Plan
- Emergency Response Plans
- Be Watchful
- Approach Polluters
- Investigate Community College Offerings
- Maintain Training Records

Inform Patrons and Independent Contractors

- Incorporate Best Management Practices into Contracts
- Post Signs Detailing Best Management Practices
- Distribute Literature to Patrons
- Host a Workshop
- Make Use of Informal Communication Mechanisms
- Recognize Boaters

Public Relations

- Publicize Your Good Deeds
- Become a Maryland Clean Marina

Business Practices

- Offer Environmental Audits for Boaters
- Consider Environmental Surcharges
- Be Diligent

Information Sources

Laws and Regulations

Selected Federal Agencies and Their Jurisdictions

- Environmental Protection Agency
- National Oceanic and Atmospheric Administration
- United States Army Corps of Engineers
- United States Coast Guard

Selected State Agencies and Their Jurisdictions

- Critical Area Commission
- Maryland Department of Natural Resources
- Maryland Department of the Environment
- Maryland Environmental Service
- Maryland Environmental Trust

Selected Federal Laws that Impact Marinas

- Clean Air Act Amendments, 1990
- Clean Vessel Act
- Coastal Zone Act Reauthorization Amendments of 1990
- Federal Water Pollution Control Act
- Marine Plastic Pollution Research and Control Act
- Oil Pollution Act of 1990
- Organotin Antifoulant Paint Control Act of 1988
- Refuse Act of 1899
- Resource Conservation and Recovery Act

Selected State Laws that Impact Marinas

- Marine Sanitation Devices
- Pumpout Systems
- Pollutant Discharge Prohibited
- Chesapeake Bay Critical Area Act

Environmental Permits and Licenses

- General Permit for Discharges from Marinas
- Summary of Environmental Permits and Licenses

Information Sources

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Clean Boating Tip Sheets

Vessel Cleaning and Maintenance

Selecting a Bottom Paint

Underwater Hull Cleaning

Petroleum Control

Vessel Sewage

Waste Containment and Disposal

Appendices

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- II Local Critical Area Commission Contacts
- III BayScapes Program
- IV Recycling Coordinators, Oil/Antifreeze Haulers, and Light Bulb Disposal Sources
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- X Gasoline Haulers
- XI Training Guide: Marina Pollution Prevention Policies
- XII Stormwater Pollution Prevention Plan

Siting Considerations for New and Expanding Marinas



Environmental Concerns

The natural plant and animal communities of coastal areas serve multiple functions. Wetlands, for example, provide habitat for fish and fowl. They form a natural buffer against incoming storms and act as a filter to purify stormwater runoff from the land. Wetlands also minimize erosion and support tourism, hunting, and fishing. Because of the ecological, economic, recreational, and aesthetic values inherent in coastal resources, it is important that shoreside development not diminish these features.

Legal Setting

Critical Area Program

Maryland enacted the Chesapeake Bay Critical Area Protection Program (Natural Resources Article §8-1801-1816 and COMAR, Title 27) in 1984. The program minimizes damage to water quality and natural habitats by fostering more sensitive development along the Chesapeake Bay. The Critical Area Law is meant to:

- ◆ minimize adverse impacts on water quality that result from pollutants that are discharged from structures or conveyances or that have runoff from surrounding lands;
- ◆ conserve fish, wildlife, and plant habitat; and
- ◆ establish land use policies for development in the Chesapeake Bay Critical Area which accommodate growth and also address the fact that, even if pollution is controlled, the number, movement, and activities of persons in that area can create adverse environmental impacts.

While the Critical Area Law is a State law, it is implemented at the local level. Counties and municipalities along the Chesapeake Bay have developed local Critical Area Programs. The programs vary slightly from county to county so local programs and ordinances should always be consulted. Local planning offices are the first point of review for most development projects. Refer to *Appendix II* for local Critical Area contacts.

The Critical Area encompasses all waters and submerged lands of the Chesapeake Bay to the head of tide and all lands and waters within 1,000 feet of mean high water or from the edge of tidal wetlands. The 100 feet of land closest to the mean high water line is a nearly development-free buffer.

Only “water-dependent” facilities, like marinas, are permitted in the buffer. Non-water dependent structures associated with marinas, such as tackle shops or dry storage areas, are not permitted in the buffer. The siting of marinas is further restricted to Intensely Developed Areas and Limited Development Areas within the Critical Area.

When selecting a site for a new or expanding marina, you must avoid or minimize your impact upon the following resources in order to comply with the Critical Area criteria.

- ◆ submerged aquatic vegetation (SAV)
- ◆ tidal and nontidal wetlands
- ◆ shellfish beds
- ◆ rare, threatened, or endangered species
- ◆ spawning, nursery, or propagation areas for anadromous fish
- ◆ shallow water habitat
- ◆ colonial waterfowl nesting sites
- ◆ existing riparian forests
- ◆ forests with interior dwelling bird species
- ◆ natural heritage areas
- ◆ tributary streams
- ◆ waterfowl staging areas

The Critical Area criteria do not apply to the Coastal Bays. The same types of considerations should be taken into account, however. See *Laws and Regulations* for a more complete discussion of Critical Area criteria.

Environmental Review

In addition to the resources listed above, the Department of Natural Resources (DNR) will evaluate all proposals— including those for projects outside of the Critical Area— for impacts to:

- ◆ stream buffers,
- ◆ wildlife corridors,
- ◆ wild and scenic rivers,
- ◆ navigational safety, and
- ◆ fisheries habitat, including natural oyster bars and barriers to migration.

The Environmental Review Unit of DNR will coordinate the Department's response to all proposals. Proposals may be submitted as part of the permit process (most environmental permits are issued by the Maryland Department of the Environment) or a preliminary plan may be submitted directly to the Environmental Review Unit. Once a preliminary plan has been reviewed, DNR can advise you what the expected impacts and mitigation measures will be.

State Tidal Wetlands Regulations

The State's tidal wetland regulations (COMAR 26.24.04.03) contain siting guidelines for new and expanding marinas. New and expanding marinas must be located to avoid and minimize impacts to tidal wetlands and other aquatic resources. Furthermore, they must be on waterways with strong flushing characterized by:

- ◆ a bottom that slopes from headwaters to mouth without sumps or other features which inhibit complete water exchange,
- ◆ an unconstricted entrance, and
- ◆ few branches, coves, and other features which inhibit complete mixing.

New or expanding marinas may not be located in water that is equal to or less than 4.5 feet deep at mean low water or in areas where their presence would adversely impact:

- ◆ submerged aquatic vegetation;
- ◆ productive macroinvertebrate communities;
- ◆ shellfish beds;
- ◆ fish spawning or nursery areas;
- ◆ rare, threatened or endangered species, or species in need of conservation; or
- ◆ historic waterfowl staging areas.

United States Army Corps of Engineers

The majority of marina development and expansion projects, including dredging, will require a permit from the Army Corps of Engineers. Section 10 of the Rivers and Harbors Act of 1899 gives the Army Corps authority to regulate all work and structures in navigable waters of the United States. Section 404 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act) regulates discharges of dredged or fill materials into navigable waters, including wetlands.

If an Army Corp Section 404 permit is required, the Maryland Department of the Environment (MDE) must investigate the site prior to construction. The Department of the Environment will document and evaluate water quality and the potential for pollution and adverse effects to living resources caused by marina siting and construction. The purpose of the Water Quality Certification process is to certify that federally permitted activities will not violate Maryland's water quality standards. The Water Quality Certification issued by MDE is then incorporated into the federal permit.

Site Selection Guidelines

Redevelop Existing Sites. Rather than disturbing pristine areas, place new facilities in previously-developed waterfront sites.

- ◆ State tidal wetlands regulations favor expansion of existing marinas over development of new facilities (COMAR 26.24.04.03).
- ◆ Critical Area criteria encourage placement of boating facilities in developed areas.

Characterize Project Site.

- ◆ Identify habitat types and seasonal use of the site by fish, shellfish, waterfowl, and other organisms.
- ❖ If necessary, hire a private consulting firm to perform the site assessment.

Identify Rare and Endangered Species.

- ◆ Rare and endangered species may not be disturbed (Federal Endangered Species Act, Natural Resources Article §4-2A-01 et seq., and Natural Resources Article §10-2A-01 et seq.).
- ◆ All proposed development sites must be assessed by the U.S. Fish and Wildlife Service (USFWS) and the Maryland Department of Natural Resources for endangered and threatened species and habitat protection areas.
- ❖ For a preliminary screening of a project site, contact your local planning office. Ask them to consult the Sensitive Species Project Review Areas (SSPRA) data layer of DNR's Geographic Information System, MERLIN.
- ❖ For more precise information concerning sensitive habitat areas, submit a project description and a photocopy of a United States Geological Survey topographic quadrangle map— with the site identified— to DNR's Environmental Review Unit and USFWS.
- ◆ If protected species are identified, you must implement an approved protection plan prior to project approval.

Avoid Submerged Aquatic Vegetation. Submerged aquatic vegetation (SAV) provides habitat for shellfish and finfish and food for waterfowl. It is an indicator of good water quality.

- ◆ Permits generally are not granted for any new or expanded construction that impacts existing SAV beds.
- ◆ State tidal wetlands regulations (COMAR 26.24.02.06) specifically prohibit dredging within 500 yards of SAV beds from April 15 to October 15.
- ◆ State tidal wetland regulations (COMAR 26.24.03.03) generally prohibit dredging in water three feet or less at mean low water, *i.e.*, prime SAV habitat.
- ◆ Critical Area criteria mandate minimum SAV disturbance as a condition for locating water-dependent facilities (COMAR 27.01.03.04).
- ❖ Site new or expanded marinas such that navigation over SAV beds is not necessary.



State tidal wetlands regulations require that dredging projects first avoid and then minimize impacts to shellfish beds, submerged aquatic vegetation, and vegetated tidal wetlands (COMAR 26.24.03.02).



Debris and silt tend to collect in poorly-flushed areas and will eventually settle to the bottom. As the debris is decomposed by bacteria, oxygen is removed from the water. Water quality may suffer if oxygen is not replaced as quickly as it is removed.

Minimize Disturbance to Wetlands.

- ◆ Minimize disturbance to wetlands and indigenous vegetation in riparian areas.
- ◆ It is the goal of the State to preserve— and when possible, increase— tidal wetland acreage and function (COMAR 26.24.01.01).
- ◆ Critical Area criteria specify that disturbance to wetlands must be minimized (COMAR 27.01.03.04).
- ◆ Any construction that does extend into tidal wetlands requires authorizations, licenses, or permits from the Maryland Department of the Environment, Army Corps of Engineers, and the Maryland Board of Public Works.
- ◆ Mitigation is required in cases where loss of wetlands is unavoidable.

Avoid Shellfish Beds.

- ◆ New or expanded marinas are not permitted in areas that may adversely impact shellfish beds (COMAR 26.24.04.03).
- ◆ Critical Area criteria require that shellfish beds not be disturbed or made subject to discharge that will render them unsuitable for harvesting (COMAR 27.01.03.04).
- ◆ An offset distance must be maintained between new marinas and shellfish beds. The separation helps to reduce chances that shellfish will become contaminated by boating-related pollutants.
- ◆ Shellfish stock may not be harvested from the waters of existing marinas.
- ◆ Harvesting shellfish from “buffer zones” in ambient waters near marina basins is prohibited between May 1 and September 30.

Avoid Critical Migration, Nesting, and Spawning Periods.

- ◆ Schedule construction to avoid critical migration, nesting, and spawning periods of important species of finfish, shellfish, and wildlife.
- ❖ Consult with DNR’s Environmental Review Unit for site-specific determinations of the potential effects of activities on wildlife populations.

Avoid Colonial Waterfowl Nesting and Staging Areas. Regional waterfowl populations converge in certain areas to breed and feed during specific times of year. The preservation of historic nesting and staging areas is vital to the continued existence of many waterbird species. Marinas must be located such that the increased boating activities associated with new or expanded marinas do not deter waterfowl from using historic staging and concentration areas.

- ◆ State tidal regulations and Critical Area criteria require new or expanding marinas to avoid areas that will adversely impact historic waterfowl staging areas (COMAR 26.24.04.03 and COMAR 27.01.03.02).

Avoid Geographic and Hydrographic Impediments. Flushing is impeded at the head of tide and in areas where salinity or temperature differences produce variations in water density. Variations in density cause the water column to separate into distinct layers that do not readily mix.

- ◆ Marinas must be located on well-flushed waterways (COMAR 26.24.04.03).

Consider Bottom Configuration.

- ❖ A continuous, gradual downward slope from the berthing area into deeper water is ideal.
- ❖ Avoid canals, irregular pockets, and sumps that are deeper than adjacent channels.
- ❖ Avoid square corners in marina basins and dead-end channels to the greatest extent possible.

Follow Natural Channels.

- ❖ Align entrance channels with natural channels to increase flushing.
- ❖ Boat lanes should progressively widen toward the seaward end and narrow toward the inland end to allow water to flow freely and maintain its velocity within the marina.
- ❖ Avoid locating the entrance channel perpendicular to the natural channel as shoaling (and, therefore, dredging) is a potential problem.
- ❖ Avoid long winding channels connecting marinas to open water.
- ❖ Where possible, establish two openings at opposite ends of the marina to promote flow-through currents.

Information Sources

Appendix I

Critical Area
Commission

Local Planning
and Zoning
Offices

Maryland
Department of
Natural Resources
• Environmental
Review

Maryland
Department of the
Environment
• Water
Management
Administration

U.S. Fish and
Wildlife Service

Appendix II

Local Critical Area
Commission
Contacts

Marina Design and Maintenance

Environmental Concerns

Land management decisions, operating procedures, and structural improvements may all contribute to— or detract from— the quality of the land and water surrounding your marina. Roads and parking areas may convey polluted stormwater directly into adjacent waterways. Dredging may resuspend toxic compounds such as heavy metals, hydrocarbons, and synthetic chemicals. Hazardous chemicals may be leached into the water from piers and other similar structures. Broken or degraded floats may release buoyant debris which birds and fish mistake for food. Finally, the location and installation of shoreside and in-water structures may lead to accelerated coastal erosion and sedimentation. Sedimentation is the rain of soil particles through the water column. It may bury bottom dwelling organisms, block sunlight, reduce the feeding efficiency of visual feeders, and clog fish gills.

Best Management Practices for Marina Facilities and Structures

Use Fixed or Floating Piers to Enhance Water Circulation. While being mindful of the need for pier/dock systems to provide access during routine operations and under emergency circumstances (*e.g.*, evacuation preceding or during a storm), piers, and other structures should be placed to enhance, rather than to obstruct, water circulation.

- ❖ Select an open design for new or expanding marinas. Open marina designs have no fabricated or natural barriers to restrict the exchange of ambient water and water within the marina area.
- ✧ Install wave attenuators to reduce the force of incoming water, if protection is necessary. Wave attenuators do not restrict water exchange nor do they interfere with bottom ecology or aesthetic view. Furthermore, they are easily removed and do not significantly interfere with fish migration and shoreline processes.
- ✧ Design new or expanding marinas with as few segments as possible to promote circulation within the basin. The fewer the segments, the better the circulation.
- ✧ Use a de-ice bubbler system to aerate areas with poor circulation.

Use Environmentally Neutral Materials.

- ❖ For new pilings and other structures that are in or above the water, use materials that will not leach hazardous chemicals into the water and which will not degrade in less than ten years time, *e.g.*, reinforced concrete, coated steel, recycled plastic, vinyl sheet piling.
- ❖ Be sure to contain shavings when field cutting plastic pilings and timbers.
- ✧ Avoid using wood treated with creosote for pilings and similar structures that are in or above the water. Wood pressure treated with chromated

copper arsenate (CCA), ammoniacal copper zinc arsenate (ACZA), or ammoniacal copper arsenate (ACA) is a better option. There is concern that these pressure treated timbers may also contribute to water pollution, however.

- ✧ Use naturally durable timbers conservatively. Black locust, cedar, chestnut, and white oak are naturally durable but expensive and may be hard to find.
- ❖ Avoid exotic timbers. Some tropical trees, such as greenheart and bongossi, are also naturally durable. Their harvest, however, is harmful to tropical forests.
- ❖ Purchase floatable foams that have been coated or encapsulated in plastic or wood. As these floats age, degraded foam is contained by the covering.

Limit Shaded Areas Over the Water.

- ✧ Near-shore bottom-dwelling organisms require sunlight. In order to provide them with as much sunlight as possible, limit the number of covered slips.

Minimize the Need for Dredging. New marinas must be located in areas where deep water access can be obtained with a minimum of excavation, filling, and dredging. Existing marinas that require maintenance dredging more frequently than once every four years should investigate practicable options to increase circulation or reduce sediment accumulation.

- ❖ Extend piers and docks into naturally deep waters.
- ❖ Locate slips for deep draft boats in naturally deep water.
- ❖ Dredge channels to follow the course of the natural channel.
- ✧ Provide dry storage for smaller boats.

Minimize the Impacts of Dredging.

- ◆ Do not dredge during critical migration or spawning periods of important species of finfish or shellfish (COMAR 26.24.02.06). Contact the Department of Natural Resources Environmental Review Unit to learn when these periods are.
- ◆ Avoid colonial waterbird nesting areas and historic waterfowl staging and concentration areas (COMAR 26.24.04.04).
- ◆ The State tidal regulations specifically prohibit:
 - mechanical dredging within 500 yards of shellfish areas December 16 to March 14 and June 1 to September 30;
 - hydraulic dredging within 500 yards of shellfish areas between June 1 and September 30; and
 - dredging between February 15 and June 15 in areas where yellow perch have been documented to spawn, and between March 1 and June 15 in areas where other important finfish species identified by DNR have been documented to spawn.
- ◆ Be certain that your dredging contractor selects an appropriate disposal site and containment design. The disposal site must have minimal impact on public safety, adjacent properties, and the environment. Dredge material must be disposed in accordance with the guidelines specified in COMAR 26.24.03.04-.05.



A Waterway Construction Permit and a Clean Water Act Section 404 Permit are required for all dredging projects.



- ❖ Use dredging methods, like hydraulic dredging, that minimize environmental impacts.
- ❖ Use turbidity curtains to contain suspended sediments.

Employ Nonstructural Shore Erosion Control Measures.

- ◆ Nonstructural measures, such as beach nourishment, marsh creation, and other methods that encourage the preservation of the natural environment are the preferred methods of shore erosion control (COMAR 26.24.01.01).
- ✧ If non-structural measures alone are not sufficient to control erosion, use revetments, breakwaters, or groins to stabilize and ensure the long-term viability of the non-structural controls.
- ✧ As a last resort, use structural controls in this order of preference: shore-line revetments, breakwaters, groins, and bulkheads.
- ◆ Minimize the adverse effects of erosion control projects on adjacent properties, navigation, threatened or endangered species, significant historic or archaeological resources, and oyster bars.

Conserve Water.

- ❖ Equip all freshwater hoses with automatic shutoff nozzles.
- ❖ Fix leaks and drips.
- ✧ Install “low-flow” faucets, toilets, and shower heads.

Maintain Structures Using Clean Marina Practices.

- ❖ Scrape, sand, and paint in-water and land-side structures according to the same management principles as for vessels (refer to the *Vessel Maintenance and Repair* chapter).
- ✧ If feasible, move floating structures to shore for scraping, painting, and major repairs.

Best Management Practices for Protecting Sensitive Areas

Minimize Impervious Areas.

- ❖ Keep paved areas to an absolute minimum, *e.g.*, just designated work areas and roadways for heavy equipment.

Use Upland and Inland Areas.

- ❖ Locate buildings, workshops, and waste storage facilities in upland areas, away from fragile shoreside ecosystems, to the greatest extent possible. Upland areas also provide a measure of protection against floods.
- ❖ Locate parking and vessel storage areas away from the water where feasible.
- ✧ Consider inland areas for boat repair activities and winter storage. Use hydraulic trailers to quickly and easily move boats to inland storage locations.

Expand Upward.

- ✧ Rather than adding wet slips, expand storage capacity by adding dry-stack storage. Boatels provide the following environmental benefits:
 - Dry-stacked boats do not accumulate marine growth. Consequently, toxic antifouling paints are not necessary and the associated need to wash, scrape, and paint is eliminated.
 - Dry-stacked boats are less likely to accumulate water in their bilges. They are, therefore, less likely to discharge oily bilge water.
- ❖ Control stormwater runoff from dry-stack areas as well as from any expanded parking areas.
- ❖ Keep forklifts well-tuned to prevent grease or oil from dripping onto staging areas or into the water.
- ◆ Locate boatels outside of the 100-foot Critical Area buffer as they are not water-dependent facilities.

Conserve Sensitive Land.

- ✧ Provide a serene setting for your marina by placing adjacent, sensitive land in a conservation trust. Income, estate, and property tax benefits are available.
- ✧ Participate in Maryland Environmental Trust's Conservation Easement Program to preserve farmland, forestland, waterfront, wetlands, rare or unique areas, scenic areas, endangered species habitat, historic properties, and open space.
- ✧ Sell or donate the land (or the development rights to the land) to a local land trust or a non-profit organization such as The Nature Conservancy.

Practice Water-wise Landscaping. Save on water bills, reduce your maintenance activities, and protect water quality by minimizing your water use.

- ❖ Water only when plants indicate that they are thirsty: shrubs will wilt and grass will lie flat and show footprints. Water in the early morning or early evening as temperatures generally are cooler. Plants will not be shocked and water loss to evaporation will be minimized.
- ❖ Select plants that are suited to the existing conditions (*i.e.*, soil, moisture, and sunlight) so that they will require little care in terms of water, fertilizer, and pesticides. Refer to *Appendix III* for a sampling of beneficial plants.
- ❖ Water deeply and infrequently rather than lightly and often. Deep watering promotes stronger root systems which enable plants to draw on subsurface water during hot spells and droughts.
- ❖ Select equipment that delivers water prudently. Sprinklers work well for lawns.¹ Soaker hoses or drip irrigation systems deliver water directly to the roots of shrubs, flowers, and vegetables with minimal loss to evaporation.

¹ For best results, water grass to a depth of 1". Refer to *Appendix III* to learn how to calculate the time needed for proper water application.



Landscape with native plants that require little care in terms of water, fertilizer, and pesticides.

- ❖ Place mulch (wood chips, bark, grass clippings, nut shells, etc.) to a depth of 3-4" around plants to keep water in the soil, prevent weeds, and reduce the amount of sediment picked up by stormwater. Planting groundcover at the base of trees serves the same function.
- ❖ Group plants with similar water needs together. This practice will ease your maintenance burden, conserve water, and benefit the plants.
- ✧ Replace lawn areas with wildflowers, groundcover, shrubs, and trees.
- ✧ Recycle "gray water." Gray water is water that has been used once—maybe for dishwashing or in a washing machine— but is not overly contaminated. It can be filtered and used to water landscaped areas. Because regulations vary, be sure to check local ordinances for permit requirements and written approval before pursuing this option.
- ✧ Collect rainwater by directing downspouts into covered containers. Use the collected water on your landscaped areas.

Adopt Integrated Pest Management Practices. Because of your proximity to the water, it is important to avoid toxic lawn and garden chemicals to the greatest extent possible. Instead, deter unwanted plants or animals with Integrated Pest Management practices. Integrated Pest Management employs preventive, cultural, biological, and chemical methods to control pests while minimizing impacts to non-target species, wildlife, and water quality.

- ❖ Select plants that are disease and insect resistant, that will out-compete common weeds, and that can thrive on your property. Refer to the BayScapes list of native plants (*Appendix III*) and consider the degree of sun exposure, slope, drainage, amount of shade, wind, volume of foot traffic, soil type, temperature variations, and other environmental factors.
- ❖ Mow lawn areas properly to suppress weeds. Varieties of grass that grow better in cooler weather should be mowed to no less than 2.5 inches in height. Grasses that grow better in warm weather should be mowed to no less than 1.5 inches.
- ❖ Pull weeds by hand to reduce reliance on herbicides.
- ❖ Boost your own tolerance for weeds and other pests. If it is not actually harming anything, leave it alone.
- ❖ Foster natural predators such as spiders, praying mantis, dragonflies, lacewings, soldier beetles, birds, bats, frogs, lizards, and certain snakes and toads.
- ❖ Use natural agents such as milky spore disease for grubs and Japanese beetles, *Bacillus thuringiensis* (BT) to control mosquito and small moth larvae, and sabadilla for chinch bugs.
- ❖ Use pesticides only after all other options have been exhausted. Use organic alternatives to chemical pesticides. Also, rather than broadcasting pesticides, apply them directly to problem areas.
- ❖ Treat only serious or threatening intolerable pest infestations.
- ❖ Purchase the least toxic chemical in the smallest amount practical.
- ❖ Do not use pesticides just before a rainfall or on a windy day.
- ❖ Apply insecticides during the evening when honeybees and other beneficial insects are less active.
- ❖ Do not apply pesticides near water, *e.g.*, shore, wells, streams, ponds, bird baths, swimming pools, etc.

Best Management Practices for Creating Habitat Areas

Maintain and/or Develop Vegetated Areas. Vegetation filters and slows the flow of surface water runoff, stabilizes shorelines, and provides wildlife habitat, flood protection, and visual diversity.

- ❖ Maintain vegetated buffers (grassy or wooded) between all impervious areas (e.g., parking lots, boat storage areas) and the water.
- ❖ Plant vegetated areas with “beneficial” plants: those plants that require minimal care in terms of trimming, watering, and applications of fertilizer and pesticides. Native, or indigenous, plants demand little care since they are adapted to the local climate and soil types. Also, many horticultural varieties and imported plants may be considered beneficial if they have few maintenance requirements and if they do not displace naturally occurring vegetation (that is, if they are not invasive). Refer to *Appendix III*.
- ❖ Select perennial plants instead of annuals. Perennial plants need only be planted once, tend to shade out most weeds, and few require additional water or maintenance.
- ❖ Choose plants that bear flowers, fruit, nuts, and seeds to attract birds, small mammals, and other wildlife.
- ❖ Maintain proper soil pH and fertility levels. Fertility describes the presence of nutrients and minerals in the soil. Acidity and alkalinity levels are indicated by pH. These two measures together tell you which plants your soil can support. Soil pH may be adjusted by adding lime (base) or gypsum (acid). Add organic matter such as compost, leaf mold, manure, grass clippings, bark, or peat moss to improve fertility.
- ❖ Annually, submit a soil sample to the University of Maryland’s Cooperative Extension Service to determine fertility, pH, and application rates for soil amendments.
- ❖ Foster beneficial critters. For example, earthworms move through the soil feeding on microorganisms. In the process, they aerate the soil, improving the flow of water and air to plant roots.
- ❖ Compost leaves, branches, grass trimmings, and other organic matter. Use the mature compost to nourish your soil. Alternatively, chip branches and leaves and use as mulch to discourage weeds and to conserve moisture. More complete information on composting is available from the University of Maryland’s Cooperative Extension Service.

Participate in Oyster Restoration Programs. Oyster reefs provide food and habitat for hundreds of animals. The oysters themselves improve water quality by filter-feeding on microscopic algae. A single 3-inch oyster can filter up to 50 gallons of water a day. Benefits accrue to marinas as well. Jonathan Jones of Haven Harbour Marina in Rock Hall noticed that his tenants became more cautious about waste disposal once he began participating in an oyster restoration program.

- ✧ Become an oyster “gardener.” Work with the Chesapeake Bay Foundation to build and install a float system for growing oysters. You will tend to seed oysters for 12 to 14 months, after which time the oysters will be transplanted to non-harvested oyster bars. Do not eat oysters grown in marinas! They will likely contain heavy metals from bottom paints and possibly bacteria from sewage discharges.

Information Sources

Appendix I

Alliance for the
Chesapeake Bay

Chesapeake Bay
Foundation

Cooperative
Extension Service

Maryland
Department of
Natural Resources

- Environmental
Review
- Fisheries Service

Maryland
Department of the
Environment

- Water
Management
Administration

Maryland
Environmental Trust

The Nature
Conservancy

U.S. Fish and
Wildlife Service

Appendix III

BayScapes Program

Stormwater Management

Environmental Concerns



Stormwater runoff is precipitation that has not been absorbed by the ground. Rather, it washes over the surface of the land picking up pollutants as it travels. Stormwater runoff may collect soil particles, petroleum products, residues from industrial activities, litter, and pet waste. All of these pollutants are carried with the runoff into surface waters where they adversely impact water quality.

The volume of stormwater runoff increases as natural forests and fields are replaced with hard surfaces such as buildings, parking lots, driveways, and roads. Also, without any plants to disrupt the flow, stormwater moves across the land more quickly than it did under predevelopment conditions. This greater, faster flow of stormwater can severely degrade receiving water bodies by accelerating erosion which leads to flooding, destruction of plant and animal life, and loss of habitat. Also, pollutants carried by stormwater impair water quality by increasing levels of nitrogen, phosphorous, suspended solids, biological oxygen demand, and chemical oxygen demand. Temperatures and levels of toxic metals and hydrocarbons tend to increase, dissolved oxygen decreases, and the acidity-alkalinity of the water typically changes. The result is that near shore areas are less able to support wildlife like young fish and crabs. Also, using the water for human recreation becomes less desirable.

Legal Setting

General Permit for Discharges from Marinas

All marinas or other facilities that conduct boat repair, painting, or maintenance (including pressure washing) are required to obtain a General Permit for Discharges from Marinas from the Maryland Department of the Environment (MDE). The permit covers stormwater and nonstorm wastewater discharges from:

- ◆ areas involved in boat maintenance (rehabilitation, mechanical repairs, painting, and fueling) and cleaning operations,
- ◆ wastewater discharges to surface or groundwater from boat and equipment washing areas,
- ◆ noncontact cooling water and condensate discharges to surface waters from ice machines, refrigeration units, and other machinery, and
- ◆ bilge water treatment systems.

The control of pollutants that may be carried by stormwater runoff from vessel maintenance areas is addressed in *Vessel Maintenance*. Please refer to *Laws and Regulations* for more information about the General Permit for Discharges from Marinas.

State Law: Sediment Control and Stormwater Management

Maryland Environment Article Title 4 Subtitles 1 and 2 require that any construction project that disturbs 5,000 square feet or more of land or results in 100 cubic yards or more of earth movement must have approved erosion, sediment, and stormwater management plans before construction begins. The plans are typically approved by the local Soil Conservation District. For construction projects that disturb five or more acres, you must also obtain coverage under the NPDES General Permit for Construction Activities.

Critical Area Program

Critical Area criteria require that the impacts of any development or redevelopment within the Critical Area be reduced by adopting measures to control stormwater runoff. The extent of the required management measures differ depending upon whether you are sited within a Limited Development Area (LDA) or an Intensely Developed Area (IDA). Any new development in Limited Development Areas must limit impervious area to 15 percent of the project site. Stormwater facilities must be designed to eliminate all runoff caused by the development in excess of that which would have come from the site if it were in its pre-development state. For Intensely Developed Areas, the criteria specify that management measures must reduce post-development pollutant loading to a level that is 10 percent below the load generated at the same site prior to development. This requirement is commonly referred to as the "10 Percent Rule." Contact your local Critical Area representative (see *Appendix II*) for guidance on complying with the 10 Percent Rule. Refer to *Laws and Regulations* for a fuller discussion of Critical Area criteria.

Best Management Practices to Control Stormwater Runoff

Practice Low Impact Development. The goal of low impact development is to develop a site without altering the existing hydrologic cycle. The approach takes advantage of a site's natural features— including vegetation— to minimize the need to build expensive stormwater control devices. It is counter to traditional stormwater management which uses structures like curbs, gutters, and storm drains to move water off-site as efficiently as possible. Traditional structures cause unnatural volumes of runoff to move into receiving waters at high velocity.



- ❖ Capture and treat stormwater on site.
- ✧ For example, direct the runoff from your parking lot to a bioretention area rather than toward a storm sewer pipe. A “rain garden” is an example of a bioretention area. It is an area planted with native vegetation and sited such that it collects stormwater. Water, nutrients, and pollutants are taken up by soil and plants within 24 to 48 hours after a storm. Rain gardens have the added advantage of being attractive areas that can provide shade and wildlife habitat, act as wind breaks, and muffle noise.
- ✧ Contact Prince George’s County Department of Environmental Resources for additional information about low impact development and rain gardens.

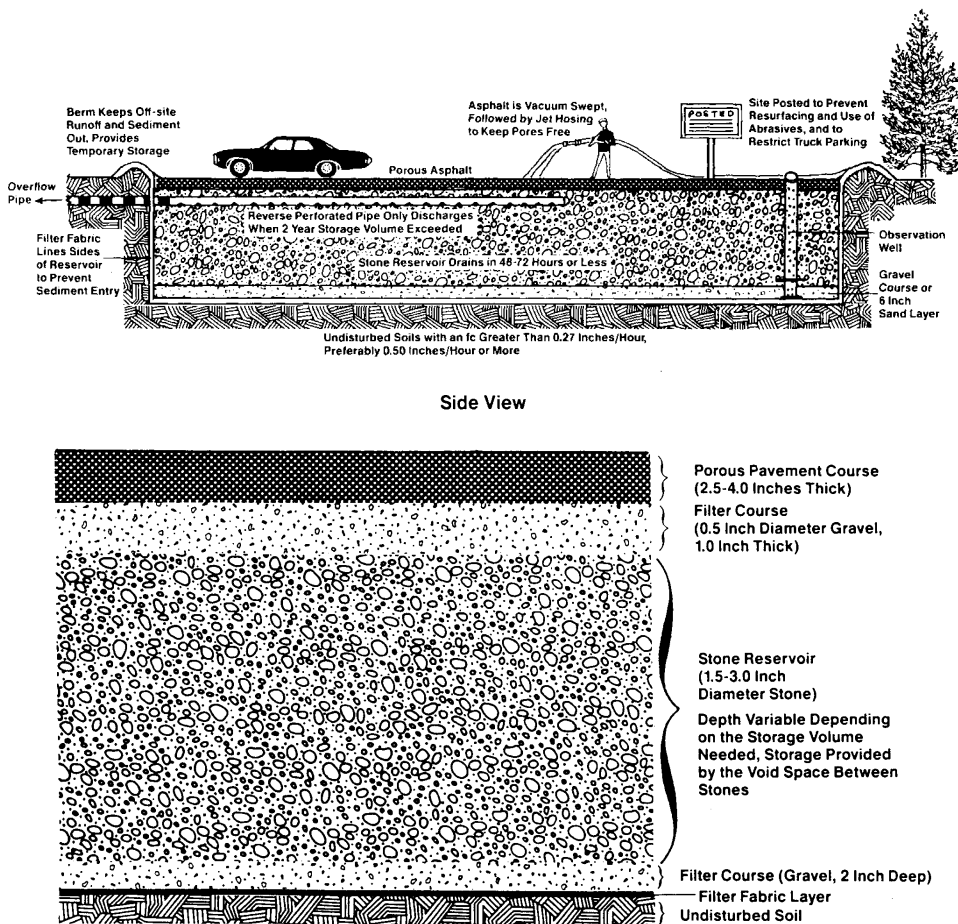
Cultivate Vegetated Areas. Healthy soil and vegetation capture, treat, and slowly release stormwater. The water is cleaned through a combination of microbial action in the soil, vegetative uptake, evaporation, and transpiration.

- ❖ Plant environmentally-sensitive landscapes at the edge of parking lots and within islands in parking lots. Refer to *Appendix III* for information about the BayScapes Program.
- ❖ Plant vegetated buffers between your upland property and the water’s edge.
- ❖ Position downspouts so that they drain to vegetated areas— avoid draining to concrete or asphalt.
- ✧ Construct wetlands to remove pollutants, protect the shore from storms, and provide habitat for aquatic species and birds.
- ✧ Use grassed swales to direct stormwater on your property. Grassed swales are low gradient conveyance channels planted with erosion-resistant vegetation. They improve water quality by filtering out particulates, taking up nutrients, and promoting infiltration. Also, water generally moves more slowly over a grassed swale than it would in a pipe. Grassed swales are not practical on very flat land, on steep slopes, or in wet or poorly drained soils.

Minimize the Amount of Impervious Area. The less impervious area on site, the less runoff you will have to manage.

- ❖ Pave only those areas that are absolutely necessary.
- ❖ Minimize the length of new roadway required to serve new or expanding marinas.
- ❖ Plan roads so they do not cross sensitive areas such as tidal wetlands.
- ❖ Consider alternatives to asphalt for parking lots and vessel storage areas, *e.g.*, dirt, gravel, seashells, engineered porous pavement. See *Figure 1* for a depiction of porous pavement.
- ✧ Investigate a non-toxic, organic soil binder derived from the *Plantago* plant family. When this binder is combined with crushed aggregate (*e.g.*, gravel, shells) and soil, it creates a somewhat permeable surface that will not erode. For less than or equal to the cost of asphalt, it is a resilient material that will not crack during winter freeze/thaw cycles, can be repaired by adding more material and tilling the surface, and can be dug up with a shovel to plant trees and shrubs.

Figure 1. Porous Pavement



Source: Schueler, T.R. 1987. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban Best Management Practices*. Washington, DC: Metropolitan Washington Council of Governments.

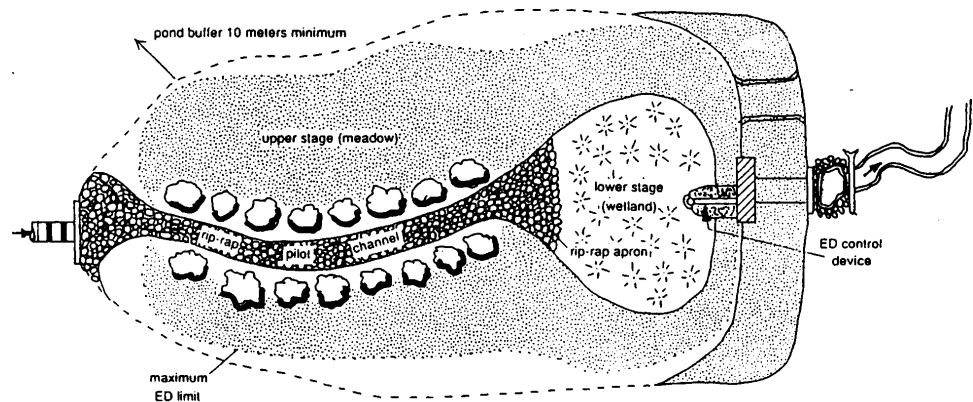
Use Structural Controls as Necessary. Because of space limitations or other constraints, it may be necessary to adopt more traditional practices such as pond systems, wetland systems, infiltration systems, and filter systems.

- Stormwater pond systems capture and slowly release storm flows. Ponds may be permanent (retention ponds) or may hold water only temporarily (detention ponds). A Dry Extended Detention pond is an example of a stormwater pond system (see Figure 2). Dry Extended Detention Ponds hold runoff for up to 24 hours after a storm. Water is slowly released through a fixed opening. The pond is normally dry between storms. This type of structure is effective for sites that are 10 acres or greater in size.
- Stormwater wetland systems are designed to mimic the ability of natural wetlands to cleanse and absorb storm flows. A Pocket Wetland (see

Figure 3) is created by excavating to the high water table elevation. Pocket wetlands can serve drainage areas of 5 to 10 acres.

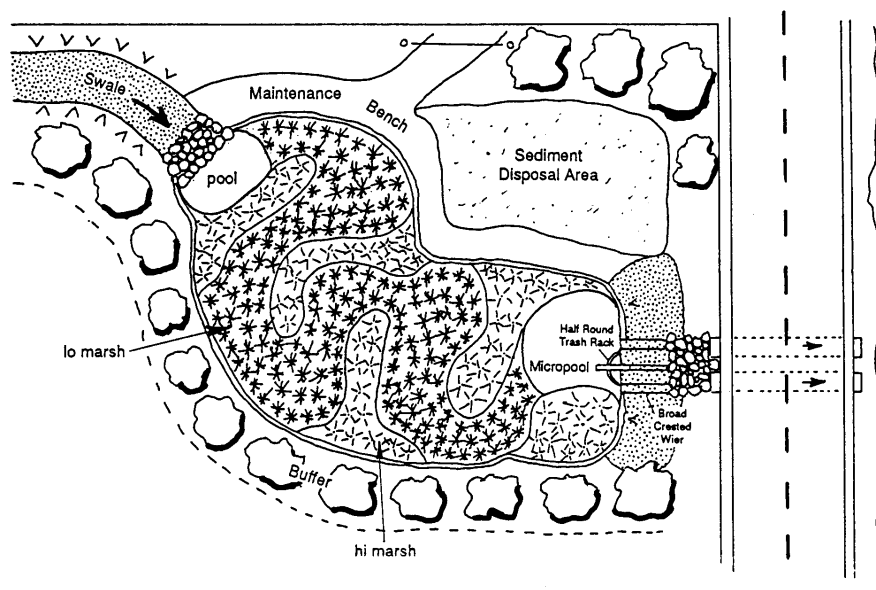
- Infiltration systems are designed to take advantage of soil's natural infiltration capacities and pollutant removal characteristics. A Dry Well (see Figure 4) is an infiltration system designed to treat roof top runoff. Water is collected in downspouts and directed into a filter composed of crushed stone and fabric. Rain gardens and porous pavement are other examples of infiltration systems.
- Filter systems "strain" runoff to remove pollutants. Conventional Sand Filter Systems (see Figure 5) are constructed of layers of sand, from most coarse on top to most fine below. The sand overlies either a gravel bed (for infiltration) or perforated underdrains (for discharge of treated water). Oil Grit Separators (see Figure 6) are another form of filter system. Water from parking lots and other areas likely to have hydrocarbons should be directed through Oil Grit Separators (or oil absorbent fabric) before entering any other management structure.
- ❖ ALL stormwater management structures must be maintained in order to be effective.
- ✧ Refer to Table 1 for assistance selecting a structure that is appropriate for your property.
- ✧ Contact MDE's Water Quality Infrastructure Program for information about grant funding to local governments for the installation of stormwater management structures in existing developed areas.

Figure 2. Dry Extended Detention Pond



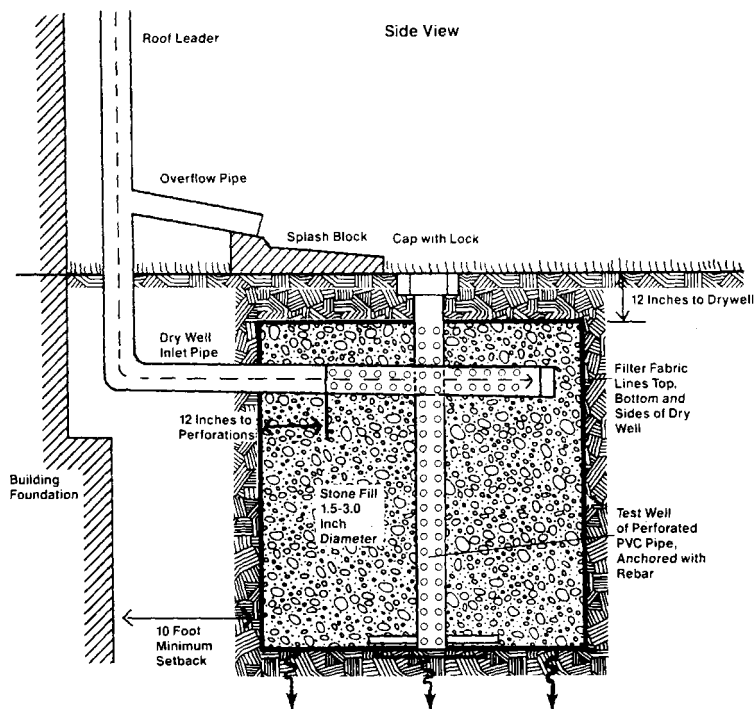
Source: Schueler, T.R. 1991. "Mitigating the Adverse Impacts of Urbanization on Streams: A Comprehensive Strategy for Local Governments," *Proceedings of the National Conference Integration of Stormwater and Local Nonpoint Source Issues*. Northern Illinois Planning Commission.

Figure 3. Pocket Wetland



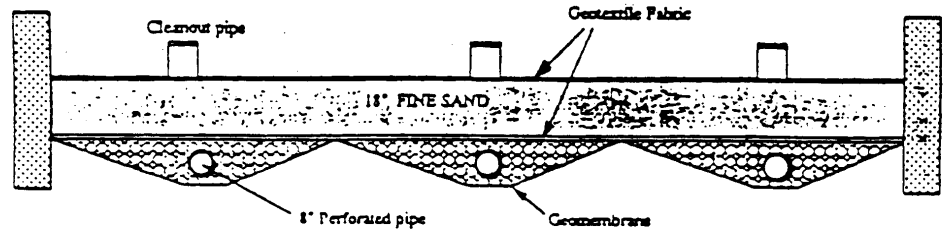
Source: Schueler, T.R. 1992. *Design of Stormwater Pond Systems*. Washington, DC: Metropolitan Washington Council of Governments.

Figure 4. Dry Well



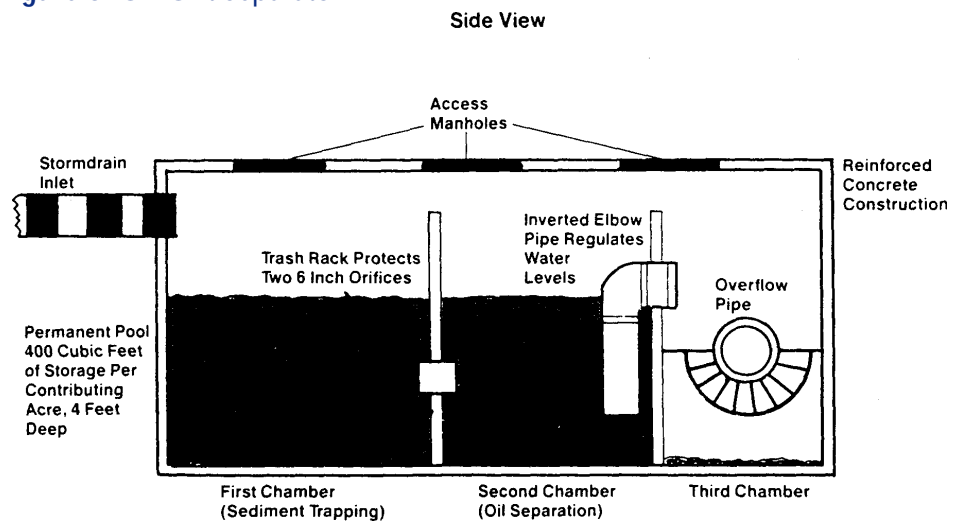
Source: Schueler, T.R. 1987. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban Best Management Practices*. Washington, DC: Metropolitan Washington Council of Governments.

Figure 5. Sand Filter



Source: City of Austin. 1991. *Design Guidelines for Water Quality Control Basins*. Austin, TX: Public Works Department.

Figure 6. Oil Grit Separator



Source: Schueler, T.R. 1987. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban Best Management Practices*. Washington, DC: Metropolitan Washington Council of Governments.

Table 1. Screening Tools for Stormwater Management Best Management Practices Physical Feasibility

Factors	BMP				
	Pond Systems Wet & Dry ED Ponds	Infiltration Systems French Drains, Dry Wells, Porous Pmt., Trenches	Wetland Systems Stormwater Wetlands	Filter Systems Sand & Peat/Sand Fillers Grassed Swales	Water Quality Inlets Oil/Grit Separators
Slope	●	○	●	○	●
High Water Table	●	○	●	○	●
Close to Bedrock	◐	○	◐	◐	○
Proximity to Foundations	●	○	●	●	○
Space Consumption	○	●	○	●	●
Maximum Depth	●	○	◐	○	○
Restricted Land Uses	●	●	○	●	○
High Sediment Input	◐	○	◐	○	○
Wetlands/Forest Permits	●	●	○	●	●
Stream Warming	○	●	○	●	●

○ May Preclude The Use Of A BMP
 ◐ Can Be Overcome With Careful Site Design
 ● Generally Not A Restriction

Source: Kumble, Peter, Lorraine Herson-Jones, and Thomas Schueler. 1993a. *Applicant's Guide for 10% Rule Compliance*. Annapolis, MD: Chesapeake Bay Critical Area Commission.

Information Sources

Appendix I

Chesapeake Bay
Foundation

Chesapeake Bay
Program Office

Maryland
Department of the
Environment

- Industrial Permits
Division
- Water
Management
Administration
- Water Quality
Infrastructure
Program

Ocean Conservancy

Prince George's
County

Appendix II

Local Critical Area
Commission
Contacts

Appendix III

BayScapes Program

Control Sediment from Construction Sites.

- ◆ Use devices such as hay bales, silt fences, storm drain filters, sediment traps, and earth dikes to prevent sediments from leaving construction areas.

Stencil Storm Drains.

- ❖ Stencil storm drains with the words "Don't Dump" and "Chesapeake Bay Drainage" (if appropriate). Stencils and instructions are available from the Chesapeake Bay Foundation and the Ocean Conservancy's Virginia Office. Be sure to get permission from the county or city department that maintains storm drains in your community. Generally, it is the Department of Public Works.

Vessel Maintenance and Repair

Environmental Concerns



Vessels require a great deal of attention. They must be scraped, painted, and cleaned. Their engines need to be lubricated and otherwise tended. They need to be prepared to withstand the cold of winter. . . . Each of these activities has the potential to introduce pollutants into the environment.

Sanding, blasting, and pressure washing are meant to remove paint and marine growth. In the process, toxic heavy metals such as copper and tin may be released. If heavy metals find their way into the water, they may be consumed by mussels, worms, and other bottom-dwelling creatures and passed up the food chain to fish, birds, and humans. Heavy metals that are not incorporated into living tissue will remain in the sediments where they will substantially increase the cost of dredge spoil disposal.

Paints, solvents, thinners, and brush cleaners generally are toxic and may cause cancer. If spilled, they may harm aquatic life and water quality. Additionally, the fumes— known as volatile organic compounds (VOCs)— released by some paints and solvents contribute to air pollution. Likewise, oil and grease from maintenance areas threaten aquatic life.

Many of the cleaning products meant to be used in boat shops are also toxic. Many contain caustic or corrosive elements. They may also contain chlorine, phosphates, inorganic salts, and metals. Even non-toxic products are harmful to wildlife. For example, detergents found in many boat cleaning products will destroy the natural oils on fish gills, reducing their ability to breathe.

Legal Setting

General Permit for Discharges from Marinas

As described earlier, all marinas that perform vessel maintenance and repair (including pressure washing) must obtain a General Permit for Discharges from Marinas from the Maryland Department of the Environment (MDE). The permit requires marina operators to control pollutants from vessel maintenance and wash areas. Please refer to *Laws and Regulations* for more information about the General Permit for Discharges from Marinas.

Critical Area Program

The Critical Area criteria state that adverse impacts to water quality from boat cleaning and maintenance operations must be minimized (COMAR 27.01.03.04).

Best Management Practices to Control Pollution from Vessel Maintenance and Repair Activities

Designate Work Areas. One of the easiest ways to contain waste is to restrict the area where maintenance activities may be performed.

- ❖ Perform all major repairs— such as stripping, fiberglassing, and spray painting— in designated areas.
- ❖ Collect all maintenance debris. Clean work areas after completing each operation or at the end of the day— whichever comes first. Remove sandings, paint chips, fiberglass, trash, etc.
- ❖ Locate the maintenance area as far from shore as possible.
- ◆ Vessel maintenance areas for new marinas within the Chesapeake Bay Critical Area must be located outside of the 100-foot buffer.
- ✧ Vessel maintenance areas should have an impervious surface (*e.g.*, asphalt or cement) and, where practical, a roof. Sheltering the area from rain will prevent stormwater from carrying debris into surface waters.
- ✧ If asphalt or cement is not practical, perform work over filter fabric or over canvas or plastic tarps. Filter fabric will retain paint chips and other debris yet— unlike plastic, or to a lesser extent, canvas— filter fabric will allow water to pass through. Tarps may potentially be re-used multiple times.
- ❖ Surround the maintenance area with a berm or retaining wall.
- ❖ Use vegetative or structural controls cited in *Stormwater Management* to treat stormwater runoff.
- ❖ Establish a schedule for inspecting and cleaning stormwater systems. Remove paint chips, dust, sediment, and other debris. Clean oil/water separators.
- ❖ Prohibit extensive maintenance or repair work outside of the designated maintenance areas.
- ❖ Clearly mark the work area with signs, *e.g.*, “Maintenance Area for Stripping, Fiberglassing, and Spray Painting.”
- ❖ Post signs throughout the boatyard describing best management practices that boat owners and contractors must follow, *e.g.*, “Use Tarps to Collect Debris.”
- ❖ Develop procedures for managing requests to use the work space, to move boats to and from the site, and to insure the use of best management practices.

As a condition of the General Permit for Discharges from Marinas, operators must "consider containing all blasting and painting activities to prevent abrasives, paint chips, and overspray from reaching the receiving water or the storm sewer system."

Contain Dust from Sanding.

- ❖ Do not let dust fall onto the ground or water or become airborne.
- ❖ Invest in vacuum sanders and grinders. These tools collect dust as soon as it is removed from the hull. Vacuum sanders allow workers to sand a hull more quickly than with conventional sanders. Additionally, because paint is collected as it is removed from the hull, health risks to workers are reduced.
- ❖ Require tenants and contractors to use vacuum sanders. Rent or loan the equipment to tenants and contractors.
- ✧ Post signs indicating the availability of vacuum sanders and grinders.
- ✧ Bring vacuum sanders to tenants if you see them working with non-vacuum equipment.
- ❖ Conduct shoreside sanding in the hull maintenance area or over a drop cloth.
- ❖ Restrict or prohibit sanding on the water to the greatest extent practical.
- ❖ When sanding on the water is unavoidable, use a vacuum sander and keep dust out of the water.
- ❖ Use a damp cloth to wipe off small amounts of sanding dust.
- ❖ Collect debris. Have your waste hauler characterize the waste and bring it to a facility authorized to manage municipal or industrial solid waste, provided that, if the waste is hazardous, the amount generated is less than 220 pounds per month or less than this amount is accumulated at any time.

Contain Debris from Blasting.

- ❖ Prohibit uncontained blasting.
- ❖ Perform abrasive blasting in the vessel maintenance area within a structure or under a plastic tarp enclosure. Do not allow debris to escape from the enclosure.
- ✧ Investigate alternatives to traditional media blasting. Hydroblasting and mechanical peeling essentially eliminate air quality problems. Debris must still be collected, however. Consider using a filter cloth ground cover.
- ✧ Avoid dust entirely by using a stripper that allows the paint to be peeled off. These products are applied like large bandages, allowed to set, and are then stripped off. When the strips are removed, the paint is lifted from the hull. Dust and toxic fumes are eliminated.
- ✧ Invest in a closed, plastic medium blast (PMB) system. These systems blast with small plastic bits. Once the blasting is completed, the spent material and the paint chips are vacuumed into a machine that separates the plastic from the paint dust. The plastic is cleaned and may be reused. The paint dust is collected for disposal. A 50-foot vessel will produce about a gallon of paint dust; substantially less than the many barrels full of sand and paint that must be disposed of with traditional media blasting methods.
- ❖ Collect debris. Have your waste hauler characterize the waste and bring it to a facility authorized to manage municipal or industrial solid waste, provided that, if the waste is hazardous, the amount generated is less than 220 pounds per month or less than this amount is accumulated at any time.

Minimize Impacts of Pressure Washing.

- ◆ Visible solids must be removed from wash water before it may be discharged. At a minimum, allow large particles to settle out. More thorough treatment involves filtration or chemical or physical techniques to treat the rinse water:
 - *filtration* uses devices such as screens, filter fabrics, oil/water separators, sand filters, and hay bales to remove particles;
 - *chemical treatment* relies upon the addition of some type of catalyst to cause the heavy metals and paint solids to settle out of the water; and
 - swirl concentrators are examples of *physical structures* that can be used to concentrate pollutants. They are small, compact soil separation devices with no moving parts. Water flowing into a concentrator creates a vortex that centralizes the pollutants. Clean water is then discharged.
- ◆ Discharge treated wash water to surface water if no detergents or other chemical cleaning agents were used. If detergents were used, the wastewater must be directed into a sewer system.
- ✧ Alternatively, reuse the wash water. For example, recycle it through the power washing system (a closed water recycling operation).
- ❖ Pressure wash over a bermed, impermeable surface that allows the waste water to be contained and filtered to remove sediments.
- ❖ When pressure washing ablative paint, use the least amount of pressure necessary to remove the growth but leave the paint intact. Where practical, use a regular garden-type hose and a soft cloth.
- ❖ Collect debris. Have your waste hauler characterize the waste and bring it to a facility authorized to manage municipal or industrial solid waste, provided that, if the waste is hazardous, the amount generated is less than 220 pounds per month or less than this amount is accumulated at any time.

The General Permit for Discharges from Marinas requires that discharge from pressure washing areas be collected or contained and that visible solids be removed.

Box 1. Bottom Paints

Antifouling bottom paints protect hulls from barnacles and other types of fouling organisms that can interfere with vessel performance. Pesticides within them also harm fish and other non-target species. Most paints work by slowly releasing a biocide, generally cuprous oxide (Cu_2O).

Copper-based paints are not used on aluminum hulls; the interaction of copper and aluminum leads to corrosion. Instead, tin-based paints (tributyl tin or TBT) are often used on aluminum-hulled vessels. Because tin is extremely toxic, it must be applied cautiously. Concentrations of TBT as low as a few parts per trillion have caused abnormal development and decreased reproductive success in oysters, clams, and snails (EPA 1993). Tin is easily absorbed by fish through their gills and accumulates to high levels in sediments. For these reasons, Federal law restricts the use of tin-based paints to aluminum vessels, boats larger than 82 feet (25 meters), and outboard motors and lower drive units. Any boatyard operator wishing to apply TBT paints must obtain a pesticide business license from the Maryland Department of Agriculture and employ an applicator certified to apply TBT.



Antifouling paints can be separated into three general categories:

Leaching Paints. Water soluble portions of leaching antifouling paints dissolve slowly in water, releasing the pesticide. The insoluble portion of the paint film remains on the hull. The depleted paint film must be removed before the boat is repainted. Most leaching paints are solvent based. Consequently, fumes are a concern.

Ablative Paints. Ablative antifouling paints also leach some toxicant into the water. The major difference is that as the active ingredient is leached out, the underlying film weakens and is polished off as the boat moves through the water. As the depleted film is removed, fresh antifouling paint is exposed. There are several water-based ablative paints on the market that are up to 97% solvent free. As a result, levels of volatile organic compounds are substantially reduced as compared to solvent-based paints. Ease of clean up is another advantage of water-based paints.

Non-toxic Coatings. Teflon, polyurethane, and silicone paints are nontoxic options. All deter fouling with hard, slick surfaces.

Minimize Impacts of Paints.

- ❖ Recommend antifouling paints which contain the minimum amount of toxin necessary for the expected conditions to your customers.
- ❖ Avoid soft ablative paints.
- ❖ Use water-based paints whenever practical. Touch up areas under jack stands with quick-drying, solvent-based paints. Ask your sales representative to recommend compatible paints.
- ✧ Stay informed about antifouling products, like Teflon, silicone, polyurethane, and wax, that have limited negative impacts. Pass the information along to your customers.
- ✧ Store boats out of the water, where feasible, to eliminate the need for antifouling paints.

Minimize Impacts of Painting Operations.

- ❖ Use brushes and rollers whenever possible.
- ❖ Reduce paint overspray and solvent emissions by minimizing the use of spray equipment.
- ❖ Prohibit spray painting on the water.
- ❖ Limit in-water painting to small jobs. Any substantial painting should be done on land, in the vessel maintenance area, and/or over a ground cloth.
- ❖ If painting with brush or roller on the water, transfer the paint to the vessel in a small (less than one gallon), tightly covered container. Small containers mean small spills.
- ❖ Mix only as much paint as is needed for a given job.
- ✧ Mix paints, solvents, and reducers in a designated area. It should be indoors or under a shed and should be far from the shore.
- ✧ Keep records of paint use to show where too much paint was mixed for a job. Use the information to prevent overmixing in the future.

Reduce Overspray. In some cases, spray painting is the only practical choice in terms of time and money. Minimize the impact of spray painting by adopting the following recommendations.

- ❖ Conduct all spray painting on land, in a spray booth, or under a tarp.
- ❖ Use equipment with high transfer efficiency. Tools such as high-volume, low-pressure (HVLV) spray guns direct more paint onto the work surface than conventional spray guns. As a result, less paint is in the air, less volatile organic compounds are released, less paint is used, and clean up costs are reduced. Air-atomizer spray guns and gravity-feed guns are other types of highly efficient spray equipment.
- ❖ Train staff to use spray painting equipment properly in order to reduce overspray and minimize the amount of paint per job.

Handle Solvents Carefully. Refer to *Waste Containment and Disposal* for further information about requirements for handling, storing, and transporting hazardous wastes.

- ◆ Store open containers of usable solvents as well as waste solvents, rags, and paints in covered, UL-listed, or Factory Mutual approved containers.
- ◆ Hire a licensed waste hauler to recycle or dispose of used solvents.
- ❖ Direct solvent used to clean spray equipment into containers to prevent evaporation of volatile organic compounds. A closed gun cleaning system will save you money on cleaning materials.
- ❖ Use only one cleaning solvent to simplify disposal.
- ❖ Use only the minimal amount of solvent (stripper, thinner, etc.) needed for a given job.
- ❖ For small jobs, pour the needed solvent into a small container in order not to contaminate a large amount of solvent.
- ✧ Use soy-based solvents and other similar products with no or low volatility.
- ✧ Order your spray painting jobs to minimize coating changes. Fewer changes mean less frequent purging of the spray system. Order your work light to dark.
- ✧ Allow solids to settle out of used strippers and thinners so you can reuse solvents.
- ✧ Keep records of solvent and paint usage so you have a handle on the amount of hazardous waste generated on site. You are required to maintain these types of records if you have a permanent, MDE-approved spray booth.

Repair and Maintain Engines with Care.

- ❖ Store engines and engine parts under cover on an impervious surface like asphalt or concrete.
- ❖ Do not wash engine parts over the bare ground or water.
- ❖ Use dry precleaning methods, such as wire brushing.
- ❖ Avoid unnecessary parts cleaning.
- ✧ Adopt alternatives to solvent-based parts washers such as bioremediating systems that take advantage of microbes to digest petroleum. Bioremediating systems are self contained; there is no effluent. The cleaning fluid is a mixture of detergent and water. Microbes are added periodically to "eat" the hydrocarbons.



To operate a permanent paint spray booth, you must obtain an air permit from the Maryland Department of the Environment.



The General Permit for Discharges from Marinas requires that marinas prevent or minimize contamination of stormwater runoff from all areas used for engine maintenance and repair. It further requires that spill prevention and response procedures be developed for all areas where spills can contribute to stormwater discharge.

- ❖ If you use a solvent to clean engine parts, do so in a container or parts washer with a lid to prevent evaporation of volatile organic compounds. Reuse the solvent. Once the solvent is totally spent, recycle it.
- ❖ Use drip pans when handling any type of liquid. Use separate drip pans for each fluid to avoid mixing. Recycle the collected fluid.
- ❖ Use funnels to transfer fluids.
- ❖ Drain all parts of fluids prior to disposal.
- ❖ Clean engine repair areas regularly using dry cleanup methods, *e.g.*, capture petroleum spills with oil absorbent pads.
- ❖ Prohibit the practice of hosing down the shop floor.

Winterize Safely.

- ❖ Use propylene glycol antifreeze for all systems. It is much less toxic than ethylene glycol antifreeze.
- ❖ Use the minimum amount of antifreeze necessary for the job.
- ❖ For health reasons, ethylene glycol should never be used in potable water systems; it is highly toxic and cannot be reliably purged come springtime.
- ❖ Add stabilizers to fuel to prevent degradation. Stabilizers are available for gasoline and diesel fuels and for crankcase oil. These products protect engines by preventing corrosion and the formation of sludge, gum, and varnish. Also, the problem of disposing of stale fuel in spring is eliminated.
- ❖ Be sure fuel tanks are 85-90 percent full to prevent flammable fumes from accumulating and to minimize the possibility of condensation leading to corrosion. Do not fill the tank more than 90% full. The fuel will expand as it warms in the springtime; fuel will spill out the vent line of a full inboard tank.
- ❖ Use the highest rated octane recommended by the engine manufacturer; premium fuels are more stable than regular.
- ❖ Be sure the gas cap seals tightly.
- ❖ Promote reusable canvas or recyclable plastic covers. Some manufacturers will clean and store canvas covers during the boating season.
- ❖ Recycle used plastic covers.

Conduct In-Water Maintenance Wisely.

- ❖ If the impacts of cleaning or maintenance activities (regardless of area involved) cannot be contained or mitigated against, remove the boat from the water. No debris should be allowed to fall into the water.
- ❖ Keep containers of cleaning and maintenance products closed.
- ❖ Restrict or prohibit sanding on the water. When it is absolutely necessary to sand on the water, use vacuum sanders to prevent dust from falling into the water. Do not sand in a heavy breeze.
- ❖ Plug scuppers to contain dust and debris.
- ❖ Do not spray paint on the water.
- ❖ Discourage underwater hull cleaning in your facility. Given the concentration of boats, underwater cleaning is dangerous to divers and the heavy metals that are released are harmful to aquatic life. Insurance to cover divers is also expensive.
- ❖ Offer incentives, like reduced mid-season haul out rates, so that boaters can have their hulls cleaned on land where contaminants may be contained.

Educate Boaters.

- ❖ Copy the *Vessel Cleaning and Maintenance*, *Selecting a Bottom Paint*, and *Underwater Hull Cleaning* tip sheets from the back of this book and distribute them to your customers. There is room on each sheet to add your marina's name and logo.
- ❖ Find out about local hazardous waste collection days. Call 1-800-4-RECYCLE or visit www.mde.state.md.us/was/recycle/index.html for local recycling contacts. Post notices informing your tenants when and where they can take their hazardous wastes.

Information Sources

Appendix I

Maryland
Department of
Agriculture

Maryland
Department of the
Environment

- Air Quality
Permits Program
- Industrial
Permits Division

Petroleum Control

Environmental Concerns



Petroleum in or on the water is harmful and, in some cases, fatal to aquatic life. Benzene, a carcinogen, is in gasoline. Oil contains zinc, sulfur, and phosphorous.

Once petroleum is introduced into the water, it may float at the surface, evaporate into the air, become suspended in the water column, or settle to the sea floor. Floating petroleum is particularly noxious because it reduces light penetration and the exchange of oxygen at the water's surface. Floating oil also contaminates the *microlayer*. The microlayer refers to the uppermost portion of the water column. It is home to thousands of species of plants, animals, and microbes. Ninety-nine percent of the Chesapeake Bay's blue crab larvae feed in the microlayer which also serves as a nursery ground for rockfish (Hardy 1991). The abundance of life in the microlayer attracts predators: seabirds from above and fish from below. Pollution in the microlayer, thus, has the potential to poison much of the aquatic food web.

Legal Setting

Federal Water Pollution Control Act (Clean Water Act)

Because of the harm associated with petroleum, the discharge of oil is absolutely prohibited. The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are subject to a penalty of \$5,000.

The United States Coast Guard must be notified any time a spill produces a sheen on the water. Call the National Response Center at 1-800-424-8802. Report the location, source, size, color, substance, and time of the spill. Failure to report a spill may result in fines.

The Clean Water Act (33 CFR 153.305) also prohibits the use of soaps or other dispersing agents to dissipate oil on the water or in the bilge without the permission of the Coast Guard (specifically, the Captain of the Port of Baltimore). Soaps, emulsifiers, and dispersants cause the petroleum to sink in the water column and mix with sediments where they will remain for years. Also, the soaps themselves are pollutants. You may be fined up to

\$25,000 per incident for the unauthorized use of soap or other dispersing agents on the water or in the bilge.

Maryland State Law

The discharge of oil is also prohibited by State law. Section 4-410(a) of Maryland Environment Article, *Annotated Code of Maryland*, states that

Except in case of emergency imperiling life or property, unavoidable accident, collision, or stranding, or as authorized by a permit issued under §9-323 of this article, it is unlawful for any person to discharge or permit the discharge of oil in any manner into or on waters of this State.

All spills must be reported immediately to the Maryland Department of the Environment (MDE): (410) 974-3551.

Best Management Practices for Preventing Spills at the Source

Protect Petroleum Storage Tanks. Fuel storage tanks at marinas typically hold from 1,000 to 10,000 gallons of fuel. If a tank was to rupture or develop a leak, the consequences could be devastating.

Above Ground Tanks

- ◆ Install double-walled or vaulted above ground fuel tanks. Tanks installed after April 21, 1978 should meet the following conditions (NFPA 30).
 - a. The capacity of the tank shall not exceed 12,000 gal (45,420 L).
 - b. All piping connections to the tank shall be made above the normal maximum liquid level.
 - c. Means shall be provided to prevent the release of liquid from the tank by siphon flow.
 - d. Means shall be provided for determining the level of the liquid in the tank. This means shall be accessible to the delivery operator.
 - e. Means shall be provided to prevent overfilling by sounding an alarm when the liquid level in the tank reaches 90 percent of capacity and by automatically stopping delivery of liquid to the tank when the liquid level in the tank reaches 95 percent of capacity. In no case shall these provisions restrict or interfere with the proper functioning of the normal or emergency vent.
 - f. Spacing between adjacent tanks shall be not less than 3 ft. (0.9 m).
 - g. The tank shall be capable of resisting the damage from impact of a motor vehicle or suitable collision barriers shall be provided.
 - h. Where the interstitial space is enclosed, it shall be provided with emergency venting.

Also, refer to NFPA 30A Automotive and Marine Service Station Code.

- ◆ Alternatively, locate above ground fuel tanks within a dike or over an impervious storage area with containment volumes equal to 1.1 times the capacity of the storage tank(s). Design containment areas with spigots to drain collected materials. If possible, cover the tank with a roof to prevent



Careless engine maintenance, refueling habits, and improper disposal of oil and contaminated bilge water release more oil into marine water each year than did the Exxon Valdez spill (Clifton et al. 1995a).



A single pint of oil released onto the water can cover one acre of water surface area (Buller 1995).

rainwater from filling the containment area. The control of any stormwater that collects in the diked area must be addressed as a condition of your General Permit for Discharges from Marinas. Refer to COMAR 26.10.01.12 for additional requirements for above ground fuel tanks.

Underground Oil Storage Tanks (USTs)

- ◆ All underground storage tanks must be registered with MDE.
- ◆ All existing and new USTs must include corrosion protection and spill and overfill prevention equipment (COMAR 26.10.03).
- ◆ Install a leak detection system on all new and existing USTs and piping (COMAR 26.10.05).
- ◆ Maintain daily product inventory. Using a stick or electronic method, measure the liquid level in the tank and reconcile the results with pump meter readings and receipt of product (COMAR 26.10.04.01E).
- ◆ Monitor USTs on a monthly basis for leaks (COMAR 26.10.05.02).
- ◆ Install a readily accessible shut-off valve on shore to halt, when necessary, the flow of fuel through a pipeline from the oil storage facility to a wharf, pier, or dock (COMAR 26.10.01.20F and 26.10.03.07).
- ◆ All motor fuel USTs must meet Federal financial responsibility requirements (*i.e.*, insurance) for environmental pollution liability.
- ◆ Drop tubes are required on all USTs containing gasoline or diesel. A drop tube is a PVC pipe that runs from the surface fill to within 6 inches of the bottom of the tank and is intended to prevent static build up.
- ❖ Contact the Maryland Department of the Environment's Oil Control Program for further information and assistance with installation or plan review.

Avoid Waves and Wakes.

- ❖ Locate fuel docks in areas protected from wave action and boat wakes when constructing new or upgrading existing facilities. For safety reasons, all fueling stations should be accessible by boat without entering or passing through the main berthing area.
- ❖ Provide a stable platform for fueling personal watercraft (PWC). You may purchase prefabricated drive-on docks or modify an existing dock by cutting a v-shaped berth and covering it with outdoor carpeting. Consider placing the PWC fueling area at the end of the fuel pier to reduce conflict with larger boats.

Maintain Fuel Transfer Equipment.

- ❖ Inspect transfer equipment regularly and fix all leaks immediately.
- ❖ Maintain transfer equipment and hoses in good working order. Replace hoses, pipes, and tanks before they leak.
- ❖ Hard connect delivery nozzles.
- ❖ Hang nozzles vertically when not in use so that fuel remaining in hoses does not drain out.

Install Environmental Controls at the Pumps.

- ◆ *Do not install holding clips.* The use of holding clips to keep fuel nozzles open is illegal at marina fuel docks (COMAR 26.10.01.20E and 26.10.03.07).

- ❖ Install automatic back pressure shut-off nozzles on fuel pump discharge hoses to automatically stop the flow of fuel into a boat's fuel tank when sufficient reverse pressure is created.
- ❖ Consider installing fuel nozzles that redirect blow-back into vessels' fuel tanks or vapor control nozzles to capture fumes.
- ❖ Maintain a supply of oil absorbent pads and pillows at the fuel dock to mop up spills on the dock and on the water.
- ❖ Place plastic or nonferrous drip trays lined with oil absorbent material beneath fuel connections at the dock to prevent fuel leakage from reaching the water.
- ❖ Post instructions at the fuel dock directing staff and patrons to immediately remove spilled fuel from the dock and water with oil absorbent material. Indicate the location of the absorbents.
- ❖ Place small gas cans in oil absorbent-lined drip pans when filling.
- ❖ Secure oil-absorbent material at the waterline of fuel docks to quickly capture small spills. Look for oil absorbent booms that are sturdy enough to stand up to regular contact with the dock and boats.
- ❖ Offer your services to install fuel/air separators on boats.

Supervise Fueling: Environmental Recommendations.

- ❖ Always have a trained employee at the fuel dock to oversee or assist with fueling.
- ❖ Train employees to clarify what the boater is asking for. For example, as your employee passes the fuel nozzle to the boater, have him or her say, "This is gasoline. You asked for gasoline."
- ❖ Train employees to hand boaters oil absorbent pads with the fuel nozzle. Request that boaters use them to capture backsplash and vent line overflow.
- ❖ Attach a container to the external vent fitting to collect overflow. There are products on the market that may be attached to the hull with suction cups. A rubber seal on the container fits over the fuel vent allowing the overflow to enter the container. Fuel captured in this manner can be added to the next boat to fuel.
- ❖ Instruct fuel dock personnel and boaters to listen to filler pipes to anticipate when tanks are nearly full.
- ❖ Encourage boaters to fill their fuel tanks just before leaving on a trip to reduce spillage due to thermal expansion and rocking, *i.e.*, if the fuel is used before it warms up, it cannot spill overboard.
- ❖ If boaters prefer to refuel upon their return to port, encourage them to fill their tanks to no more than 90 percent of capacity.
- ❖ Instruct boaters to slow down at the beginning and end of fueling.
- ❖ Require boaters to stay with their craft during fueling.

Supervise Fueling: Safety Recommendations.

- ❖ Always have a trained employee at the fuel dock to oversee or assist with fueling.
- ❖ Remind boaters that gasoline vapors are heavier than air; they will settle in a boat's lower areas.
- ❖ Require all passengers to get off gasoline powered vessels before fueling.



The person fueling the vessel, generally the boater, is liable for all penalties associated with spilled fuel.

- ❖ Instruct boaters to:
 - Stop all engines and auxiliaries
 - Shut off all electricity, open flames, and heat sources
 - Extinguish all cigarettes, cigars, and pipes
 - Close all doors, hatches, and ports
 - Maintain nozzle contact with the fill pipe to prevent static spark
 - Inspect bilge after fueling for leakage or fuel odors
 - Ventilate all compartments after fueling until fumes are gone
- ❖ Train dock staff to carefully observe fueling practices; make sure fuel is not accidentally put into the holding or water tank.

Box 2: Oil Absorbent Material

Oil absorbent pads, booms, and pillows absorb hydrocarbons and repel water. Depending upon the type, they may hold up to 25 times their weight in oil. These types of products are useful for capturing spurts at the fuel dock, cleansing bilge water, and wiping up spills in engine maintenance areas.

There are a number of new twists on basic oil absorbent materials. One variety of oil absorbent boom captures oil from the bilge and solidifies into a hard rubber bumper. Other types contain microbes that digest the petroleum. The oil is converted to carbon dioxide and water. Because the microbes take 2 to 3 weeks to digest a given input of oil, it is not appropriate to use these types of products for a spill of any significant size. Rather, they are designed to control the minor drips associated with routine operations. Care must still be taken that free floating oil is not discharged overboard.

Yet another type of oil absorbent product is a boom constructed out of oil absorbent polypropylene fabric and filled with dehydrated microbes. These booms hold the petroleum in the fabric until it is digested by microbes. Threats associated with free floating petroleum are thereby minimized.

How you dispose of used oil absorbent material depends on what type of product it is and how it was used:

- Standard absorbents that are saturated with gasoline may be air dried and reused.
- Standard absorbents saturated with oil or diesel may be wrung out over oil recycling bins (if they are saturated with oil or diesel only!) and reused. Alternatively, they should be double bagged— one plastic bag sealed inside of another— and tossed in your regular trash.
- Bioremediating bilge booms may be disposed in your regular trash as long as they are not dripping any liquid. Because the microbes need oxygen to function, do not seal them in plastic bags.



Oil absorbent materials, such as pillows (left), pads (center), and booms (right) absorb up to 25 times their weight in oil while repelling water.

Turn Down the Pressure. Problems with backsplash and vent-line overflow are often due to the high pressure flow of fuel from the pump.

- ✧ Ask your fuel company representative to set the delivery rate to 10 gallons per minute, especially if you cater to small boats.

Advocate the Use of Oil Absorbent Materials.

- ❖ Distribute pads, pillows, or booms to your customers.
- ✧ Require tenants to use oil absorbent materials as part of your lease agreement.

Provide an Oil/Water Separator.

- ✧ Invest in a portable or stationary oil/water separator to draw contaminated water from bilges, capture hydrocarbons in a filter, and discharge clean water. The discharge from an oil/water separator must be sampled in accordance with the requirements of the General Discharge Permit for Marinas.

Offer Spill-Proof Oil Changes.

- ❖ Purchase a non-spill pump system to draw crankcase oils out through the dipstick tube. Use the system in the boat shop and rent it to boaters who perform their own oil changes.
- ❖ Slip a plastic bag over used oil filters prior to their removal to capture any drips. Hot drain the filter by punching a hole in the dome end and draining for 24 hours. Recycle the collected oil. Recycle the metal canister if practical. If not, dispose in your regular trash.
- ✧ Encourage the use of spill-proof oil change equipment as a condition of your slip rental agreement.

Minimize Spills and Leaks from Machinery.

- ❖ Use non-water-soluble grease on Travelifts, fork lifts, cranes, and winches.
- ✧ Place containment berms with containment volumes equal to 1.1 times the capacity of the fuel tank around fixed pieces of machinery that use oil and gas. The machinery should be placed on an impervious pad. Design containment areas with spigots to drain collected materials. Dispose of all collected material appropriately. Refer to the *Waste Containment and Disposal* section of this guidebook. If possible, cover the machinery with a roof to prevent rainwater from filling the containment area.
- ✧ Place leak-proof drip pans beneath machinery. Empty the pans regularly, being conscientious to dispose of the material properly (uncontaminated oil and antifreeze may be recycled).
- ✧ Place oil-absorbent pads under machinery.

Educate Boaters.

- ❖ Photocopy the *Petroleum Control* tip sheet from the back of this book and distribute to your customers. There is room to add your marina's name and logo.

Best Management Practices for Emergency Planning



Prepare a Spill Prevention, Control, and Countermeasure (SPCC) Plan.

- ◆ The Environmental Protection Agency's Oil Pollution Prevention Regulation requires that marinas prepare and implement a plan to prevent any discharge of oil into navigable waters or adjoining shorelines if the facility has an aggregate above ground storage capacity greater than 1,320 gallons. Oil is defined in the SPCC regulations (40 CFR 112) as "oil of any kind or in any form, including but not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil and oily mixtures."
- ◆ The plan must address:
 - operating procedures implemented by the facility to prevent oil spills,
 - control measures installed to prevent a spill from entering navigable waters or adjoining shorelines, and
 - countermeasures to contain, cleanup, and mitigate the effects of an oil spill that impacts navigable waters or adjoining shorelines.
- ◆ The SPCC plan must be certified by a professional engineer and kept on-site for EPA review. If a single spill of greater than 1,000 gallons occurs or two discharges of 42 gallons or more occur within one year, a copy of the SPCC plan must be submitted to EPA Region III.
- ◆ SPCC plans must be reviewed by the marina owner or manager at least every five years (40 CFR 112.5). A record of the review should be kept in the beginning of the plan showing the reviewer's signature, date signed, and list of any changes. Major changes such as tank installations or removals require a formal amendment signed by an engineer.
- ❖ Use the template in Appendix VIII to create your SPCC plan.

Assess Hazards.

- ❖ Consider and plan for likely threats:
 - fuel spill
 - holding or water tank filled with gas
 - spill at the storage area: used oil, antifreeze, solvents, etc.
 - fire
 - health emergency
 - hurricane, etc.

Develop Emergency Response Plans.

- ❖ Develop written procedures describing actions to be taken under given circumstances. The plans should be clear, concise, and easy to use during an emergency, *e.g.*, use a large type size. Each emergency response plan should contain the following information:
Where:
 - In the very front of the plan, insert a laminated site plan of the facility showing valves, pipes, tanks, structures, roads, hydrants, docks, power and fuel shutoffs, hazardous material storage locations, and telephones.
 - Describe where response material is located.

Who:

- Identify who is responsible for taking what action, *e.g.*, deploying equipment, contacting emergency agencies, etc.
- Designate one person on the marina staff as the official spokesperson for the facility.
- Include a list of emergency phone numbers: U.S. Coast Guard's National Response Center (800) 424-8802, MDE's Emergency Response Division (410) 974-3551, Maryland Poison Center (800) 492-2414, local fire and police departments, owner, neighboring marinas that have emergency response equipment, and spill response contractors (see *Appendix VI*).
- Include a brief description of each agency's jurisdiction and information about what type of equipment and services are available from neighboring marinas and spill response firms.

What:

- State what action should be taken during an emergency and, based on likely threats, what equipment should be deployed. Include information about what type of equipment is available on site and what its characteristics and capabilities are.
- Characterize the facility's waterfront and vessels.
- Describe the type, amount, and location of materials stored on site, *e.g.*, petroleum and hazardous materials.

How:

- Explain how the equipment should be used and disposed.

When:

- Indicate when additional resources should be called for assistance.
- ❖ Update the plans annually to include any new technology or equipment and to confirm phone numbers.
- ❖ Use the outline in Appendix IX to create your emergency plans or obtain a copy of the *Panic Preventer File for Marinas* from Florida Sea Grant.

Make Plans Accessible.

- ❖ Keep copies of all Emergency Response Plans in a readily accessible location.
- ❖ Place a copy of the Oil Spill Response Plan (or SPCC plan if applicable) in the oil spill response kit.

Train Employees.

- ❖ Review plans and response procedures with staff at the beginning of each boating season.
- ❖ Train employees in the use of containment measures.
- ❖ Run emergency response drills at least twice annually.
- ❖ Invite the U.S. Coast Guard and local fire department to demonstrate emergency response procedures at your marina.

Share Your Emergency Response Plans.

- ❖ Inform your local fire department and harbor master, if applicable, about your emergency response plans and equipment.
- ❖ Let neighboring marinas know what resources are available at your marina.

Maintain Oil Spill Response Equipment.

- ❖ Maintain enough oil spill response equipment to contain the greatest potential spill at your facility.
- ❖ Store enough boom to encircle the largest vessel in your facility. Vessel length x 3 = required length of boom.

Store Oil Spill Response Equipment Smartly.

- ❖ Store the equipment where the greatest threat of an oil spill exists: fuel receiving and fuel dispensing areas.
- ❖ Store materials in an enclosed container or bin that is accessible to all staff— especially those who handle the fueling operations.
- ❖ Mark the storage site with a sign reading “Oil Spill Response Kit.” Include instructions for deploying pads and booms and notification that all spills must be reported to the USCG at (800) 424-8802 and MDE at (410) 974-3551.
- ✧ Consider leaving the storage container unlocked so that it is available to patrons, as well as to staff. If leaving the bin unlocked at all times is not palatable, try leaving it unlocked just on weekends and holidays when both activity and risk are greatest.
- ✧ If the bin is left unlocked, check the inventory regularly.

Box 3. Fuel Spill

What do you do when oil, gas, or diesel is spilled on the water?

1. Stop the flow.
2. Contain the spill.
3. Call the U.S. Coast Guard’s National Response Center at (800) 424-8802 and Maryland Department of the Environment’s Emergency Response Division at (410) 974-3551.

Failure to report spills to the Coast Guard may result in civil penalties.

If less than a gallon is spilled and you clean it up immediately, the Coast Guard will probably not send anybody to your facility. The spill is still a violation, however.

Call the Coast Guard if a slick floats into your marina from an unknown source. The Coast Guard will clean up the spill with their own resources. They will also investigate and try to eliminate the source of the spill. You will not be held liable for a slick that did not originate at your facility.



Be Prepared for a Fire.

- ❖ Meet the National Fire Protection Association’s standards for marinas: NFPA 303, Fire Protection Standards for Marinas and Boatyards; NFPA 302, Fire Protection Standards for Pleasure and Commercial Motor Craft; NFPA 30A, Automotive and Marine Service Station Code; NFPA 307, Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves; and NFPA 33, Standard for Spray Application Using Flammable and Combustible Materials.

- ❖ Be sure hydrants are available to allow for fighting fires throughout your facility.
- ❖ Install smoke detectors.
- ❖ Provide and maintain adequate, readily accessible, and clearly marked fire extinguishers throughout the marina, especially near fueling stations.
- ❖ Inspect and test all fire fighting equipment and systems regularly. Test fire extinguishers annually.
- ❖ Train personnel on fire safety and response: who to call, location of hydrants, use of portable extinguisher, etc.
- ❖ Provide ready access to all piers, floats, and wharves for municipal fire fighting equipment.
- ❖ Call the State Fire Marshal's Office at 800-525-3124 to schedule a "basic fire inspection." The inspection will determine whether you are meeting the state fire code, including hazardous material storage requirements.
- ❖ Invite the local fire marshal to visit your marina annually to train employees. These annual visits will also help the fire department to become familiar with your facility.

Maintain Material Safety Data Sheets.

- ◆ Keep a file of Material Safety Data Sheets (MSDS) for all products used at your facility, as required by the Occupational Safety and Health Act of 1970 (29 USC Sec. 657). Store the file in an office away from material storage areas. Keep in mind during an emergency that this file will not tell you what quantity is on site or even whether all the materials listed are present.
- ❖ Inform the Local Emergency Planning Committee what materials you store and what is released when they burn.

File Tier Two Forms

- ◆ The Emergency Planning and Community Right-to-Know Act (EPCRA) requires that marinas with 10,000 pounds or more of petroleum (approximately 1,250 gallons) file "Tier Two" forms with emergency response agencies by March 1 of each year. The single-page form must be submitted to MDE, your local Emergency Planning Committee (LEPC), and your local fire department. Forms and contact information for LEPCs is available from MDE at www.mde.state.md.us/pia/fs_epcra.htm or (410) 631-3800.

Information Sources

Appendix I

Florida Sea Grant
College Program

Maryland
Department of the
Environment

- Emergency
Planning and
Community
Right-to-Know
- Hazardous
Waste Program
- Oil Control
Program

National Fire
Protection
Association

State Fire
Marshal's Office

United States
Coast Guard

United States
Environmental
Protection Agency

Appendix VIII

Spill Prevention,
Control and
Countermeasure
Plan

Appendix IX

Emergency
Response Plans

Sewage Handling

Environmental Concerns

Raw or poorly treated boat sewage is harmful to human health and water quality. Typhoid, hepatitis, cholera, gastroenteritis, and other waterborne diseases may be passed directly to people who swim in contaminated waters. People may also become infected by eating shellfish contaminated with viruses and other microorganisms contained in sewage discharge.



Sewage is also harmful to water quality. Because the microorganisms within sewage need oxygen, any effluent discharged to waterways reduces the amount of oxygen available to fish and other forms of aquatic life. Furthermore, the heavy nutrient load in sewage promotes excessive algal growth. As the algae multiply, they prevent life-giving sunlight from reaching subsurface vegetation. When the algae die they create another problem: the algae are decomposed by bacteria which further reduce levels of dissolved oxygen.

Legal Setting

Marine Sanitation Devices

For all of the reasons stated above, it is illegal to discharge raw sewage from a vessel within U.S. territorial waters, *i.e.*, anywhere other than three or more miles out into the open ocean. The Federal Clean Water Act and Maryland law (Natural Resources Article §8-741) require that any vessel with an installed toilet be equipped with a certified Type I, Type II, or Type III marine sanitation device (MSD):

- *Type I* systems mechanically cut solids, disinfect the waste with a chemical additive or with chlorine disassociated from salt water with an electronic jolt, and discharge the treated sewage overboard. The fecal coliform bacteria count of the effluent may be no greater than 1,000 per 100 milliliters and may not contain any floating solids.
- *Type II* systems are similar to Type I systems except that the Type IIs treat the sewage to a higher standard; effluent fecal coliform bacteria levels may not exceed 200 per 100 milliliters and total suspended solids may not be greater than 150 milligrams per liter. Type IIs also require more space and have greater operating energy requirements.

- *Type III* systems do not allow sewage to be discharged. The most common form of a Type III system is a holding tank. Other forms include recirculating and incinerating systems.

Vessels 65 feet and under may have any of the three types of MSDs. Vessels over 65 feet must have a Type II or III system. Additionally, Type I and Type II systems must display a certification label affixed by the manufacturer. A certification label is not required on Type III systems.

State law allows a vessel with an installed toilet to have a "Y" valve or other means to bypass the sanitation system. Within State waters, including the entire Chesapeake Bay and its tributaries, however, all pathways for over-board discharge of raw sewage must be secured. The "Y" valve may be secured with a padlock or a non-reusable nylon tie known as a wire tie. Alternatively, the valve handle can be moved to the closed position and removed.

Finally, any vessel with an installed toilet that is offered in Maryland as a noncaptained charter must be equipped with an operational MSD. The lease agreement signed by the leasing party must include a paragraph outlining the operator's responsibility under Natural Resources Article §8-741.

It should be noted that MSD requirements do not apply to vessels with portable toilets. Portable toilets should be properly emptied on shore. Remember, it is illegal to discharge raw sewage to any State waterway. Most pumpout facilities have wand attachments to empty portable toilets. Some marinas have portable toilet dump stations.

Pumpout Stations

Maryland law, Environment Article §9-333, requires the following types of facilities to have pumpout stations:

- ◆ Existing marinas wishing to expand to a total of 11 or more slips and that are capable of berthing vessels that are 22 feet or larger.
- ◆ New marinas with more than 10 slips and that are capable of berthing vessels that are 22 feet or larger.
- ◆ Marinas with 50 or more slips and that berth any vessel over 22 feet in length. Marinas with 50 or more slips must be able to accept waste from portable toilets as well as from holding tanks.

Installation of a pumpout system may also be required as a condition of receiving a wetlands permit from the Maryland Department of the Environment.



While not required, it is a good idea to include information about the MSD law in your contracts for slips, transients, and liveaboards too.



Marinas may apply for up to \$15,000 in grant funding to install pumpout systems.

No Discharge Zones

A No Discharge Zone (NDZ) is an area of water that requires greater environmental protection and where even treated sewage may not be discharged from a boat. When operating in an NDZ, Type I and Type II systems must be secured to prevent discharge. All freshwater lakes, reservoirs, and rivers not capable of interstate vessel traffic are defined by the Federal Clean Water Act as No Discharge Zones. States, with the approval of the U.S. Environmental Protection Agency, may establish NDZs in other State waters. In spring 2002, EPA approved two No Discharge Zones for Maryland: Herring Bay and the northern Coastal Bays.

Best Management Practices to Control Sewage

Install a Pumpout System. Help boaters to meet the requirements of the law by providing a convenient, reliable marine sewage disposal facility, *i.e.*, a pumpout station. You, as a marina operator, may benefit from the installation of a pumpout in several ways. The presence of the pumpout facility promotes a public perception that you are environmentally responsible. More tangibly, the need for holding tanks to be pumped out regularly will draw a steady stream of customers to your dock. Each arriving vessel represents an opportunity to sell fuel, hardware, repair services, etc.

Any public or private marina in Maryland is eligible to apply for up to \$15,000 in grant funds to install a pumpout station. To apply for a Pumpout Station Grant, contact the Maryland Department of Natural Resources (DNR) for an application. Please be aware that the grants are *strictly reimbursable*. You must pay for the equipment and installation up front. The Department will then reimburse you for pre-approved expenses.

In exchange for grant funding, marina owners agree to maintain pumpout systems in operating condition for a minimum of 10 years and agree not to charge more than \$5 per pumpout. The pumpout system must be able to accept waste from portable toilets as well as from holding tanks and must be available to the general public during reasonable business hours. Although most marinas choose to use grant funding, there is no requirement to do so.

Once you have decided to invest in a pumpout system, consider the following recommendations.

❖ **Select an Appropriate System.** Select a system that best meets the needs of your clients and that can move the expected volume of sewage over the required distance. Ask the manufacturer for a written assurance that their system will operate effectively given the specific conditions at your marina.

There are several types of pumpout systems available:

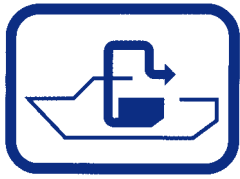
- systems permanently fixed to a dock,
- mobile systems mounted on a golf cart or hand truck,

- direct slingside connections, and
- pumpout boats.

Please note that grant funding is not available for direct slingside connections as these types of systems generally are not available for public use.

- ❖ *Choose an Accessible Location.* Consider where the pumpout will be placed (if you select a fixed system). It should easily accommodate the types of boats that frequent your marina. Fuel docks are often good locations. Try to locate the pumpout system such that a vessel being pumped out does not prevent another boat from fueling.
- ❖ *Dispose of Collected Waste.* The best option for disposing of the collected waste is to connect directly to a public sewer line. If sewer is not available in your area, you will need a holding tank. The contents of the tank must be pumped periodically and trucked to a treatment plant. Holding tank size and location is generally determined by the local health department.
- ❖ *Handle Collected Waste with Care.* For health reasons, workers should take precautions to avoid coming into direct contact with sewage. Workers should wear rubber gloves and respirators when maintaining or repairing MSDs.
- ❖ *Decide if the Pumpout will be Staffed.* It is a good idea to have an attendant operate the pumpout. Consider installing a buzzer or paging system so that boaters at the pumpout station can easily locate the attendant. If the station is unattended, be sure that clear instructions for use are posted.
- ❖ *Decide Whether a Fee Will be Charged.* If a fee is charged, how much will it be? Will tenants and liveaboards be charged? Or just transients? Remember, no more than \$5 may be charged if grant funds were accepted for the purchase and/or installation of the system. If the pumpout system is not regularly staffed, you will have to make arrangements to collect the fee. Token systems have been used with success in many locations in Maryland.
- ❖ *Post Signs.* Provide information about use and cost of the pumpout station, hours of operation, and where to call for service if the system is out of order. Also, post signs that are visible from the channel so that passing boaters are aware of the facility. If you do not have a pumpout system, post directions to the closest public pumpout.
- ❖ *Maintain the Pumpout System.* You should inspect the system regularly and keep a log of your observations. Contact the pumpout manufacturer for specific maintenance and winterization recommendations. During the boating season, test the efficiency of the pump weekly by measuring the length of time required for the system to empty a 5-gallon bucket of water. In order to quickly address any malfunctions, establish a maintenance agreement with a contractor qualified to service and repair pumpout facilities. Some funding for maintenance and repair of pumpout

Be careful how you word your signs! Shortly after installing one of the first pumpout systems in Annapolis, a marina owner hung a large sign declaring the availability of his new facility. Over the course of the next week, he noticed a significant drop in fuel sales. One evening he watched one of his regular customers head across Spa Creek to a competitor's fuel dock. The marina manager called out to ask why the boater was bypassing his marina. The boater gestured toward the sign hung over the dock shared by the pumpout system and the fuel pumps. It read, "Pump Out." The boater thought "pump out" meant that the fuel pumps were out of order! A better choice for signs might be "Pumpout Station," "Sewage Pumpout," or simply show the national pumpout symbol.



The national pumpout symbol is an easy way to advertise the availability of pumpout facilities.

systems may be available through the Department of Natural Resources. Contact DNR for more information.

- ❖ **Do Not Allow Waste to Drain into Receiving Waters.** Do not allow rinse water or residual waste in the hoses to drain into receiving waters. Keep the pump running until it has been re-primed with clean water.
- ❖ **Educate Staff.** The Department of Natural Resources is aware of several incidents in which boaters were told that the pumpout system was broken when in fact it was not. The Department has also received complaints about rude dockhands and inconvenient procedures. If boaters are going to use the pumpout systems, the experience must be as pleasant and convenient as possible. As the manager of a marina with a pumpout, you are demonstrating your commitment to clean water. It is imperative that your staff exhibit this same level of care.

Discourage Discharge from Type I and Type II MSDs at the Slip or Mooring. Effluent from legal Type I and Type II systems contains nutrients and possibly toxic chemicals. It probably contains pathogens as well. While many pass-through systems are capable of treating sewage to much higher levels, recall that the standard for Type I systems is a fecal coliform bacteria count of 1,000 per 100 milliliters. Bathing beaches may be closed at levels of 200 per 1,000 milliliters (COMAR 26.08.09.06). Thus, discharges from Type I and Type II systems in crowded, protected areas— such as marinas— pose a real threat to human health and water quality. Adopt the following recommendations to discourage discharge within your facility.

- ❖ Prohibit discharge of head waste in your marina as a condition of your lease agreements.
- ❖ Post signs prohibiting the discharge of head waste and directing people to use shoreside restrooms.
- ◆ If your marina is located within a No Discharge Zone (presently just Herring Bay and the northern Coastal Bays), boaters must secure their Type I and Type II MSDs, *e.g.*, lock the door to the head or disable the seacock.

Provide Shoreside Restrooms.

- ❖ Provide clean, functional restrooms to encourage people not to use their heads while in port.
- ❖ Make restrooms available 24 hours a day.
- ❖ Install a security system on restroom doors so people will feel safe using them, particularly late at night.
- ✧ Provide air conditioning and heating.

Design and Maintain Septic Systems to Protect Water Quality and Public Health. If you have a septic system, be alert for signs of trouble: wet areas or standing water above the absorption field, toilets that run slowly or back up, and odor. Septic failures can contaminate drinking water and shellfish. The following tips will help you to avoid the health risks and nuisance associated with an overburdened system (Miller and Eubanks 1992).

- ❖ Post signs in the restrooms informing patrons not to place paper towels, tissues, cigarette butts, disposable diapers, sanitary napkins or tampons in the toilets. These items can clog the septic system.
- ❖ Post signs in the laundry room encouraging patrons to use minimal amounts of detergents and bleaches.
- ❖ Do not dump solvents such as paint thinner or pesticides down the drain and post signs prohibiting customers from doing the same.
- ❖ Do not pour fats and oils down drains.
- ❖ Do not use a garbage disposal. Disposals increase the amount of solids entering the system. Capacity is reached more quickly. As a result, more frequent pumping is necessary.
- ❖ Use small amounts of drain cleaners, household cleaners, and other similar products.
- ❖ Do not use "starter enzyme" or yeast. These products can damage the system by causing the infiltration bed to become clogged with solids that have been flushed from the septic tank.
- ❖ Direct downspouts and runoff away from the septic field in order to avoid saturating the area with excess water. For stormwater management reasons, do not direct the flow toward paved areas.
- ❖ Do not compact the soil by driving or parking over the infiltration area.
- ❖ Hire a licensed professional to pump the tank every 2-5 years.

Provide Facilities for Liveaboards. Boaters who make their homes aboard vessels pose a tricky problem. It is not reasonable to expect that they will regularly untie in order to use a fixed pumpout facility. It is also unwise to assume that people living on their boats will always use shoreside restrooms. Furthermore, it is undesirable to allow a resident population to discharge Type I or II systems. Your obligation as marina owner/manager is to provide a convenient sewage disposal system for liveaboards while maintaining good water quality. Consider the following options to meet this challenge. Keep in mind that most liveaboards expect and are willing to pay a premium for extra service and more convenient slips.

- ❖ Provide a portable pumpout system or require that liveaboards contract with a mobile pumpout service.
- ❖ Reserve slips closest to shoreside restrooms for liveaboards. Be sure that the dock and route to the bath house are well lit at night.
- ❖ Stipulate in the lease agreement that vessels used as homes may not discharge any sewage.
- ❖ Offer to board their vessels and demonstrate the proper way to secure the "Y" valve.
- ✧ As a condition of the lease agreement, require that liveaboards place dye tablets in holding tanks to make any discharge clearly visible.
- ✧ Install direct sewer hookups for liveaboards.

Offer MSD Inspections.

- ✧ Service patrons' MSDs annually to ensure that their Type I and II systems are functioning properly.
- ✧ Encourage boaters to run dye tablets through their Type I or Type II systems outside of the marina. If a system is operating properly, no dye will be visible. Maintenance is required if dye can be seen in the discharge.



Sewage and gray water from bath houses and laundry facilities may be discharged to a publicly owned treatment works or to an approved septic system.

Information Sources

Appendix I

American Boat and
Yacht Council

Maryland
Department of
Natural Resources
• Natural Resources
Police
• Waterway and
Greenways
Division

Encourage Compliance.

- ❖ Include information about MSD requirements and sewage laws in contracts for slips rentals, transients, and liveaboards.
- ❖ State that failure to comply with the MSD laws and marina policy will result in expulsion from the marina and forfeiture of fees.
- ❖ If a customer fails to observe the law or honor your contract: 1) discuss the matter with him or her, 2) mail a written notice asking that the offending practice stop immediately and keep a copy for your records, and 3) evict the boater.
- ❖ If a tenant is discharging raw sewage, report him or her to the Natural Resources Police. Provide as much information as possible: name of owner, vessel, location, etc.

Educate Boaters. As the generators and conveyors of sewage, boaters need to be educated about the impacts of sewage and its proper disposal. They must also be encouraged to properly maintain their MSDs and to purchase environmentally-friendly treatment products for their heads and holding tanks.

- ❖ Photocopy the *Sewage Handling* tip sheet from the back of this book and distribute it to your customers. There is room to add your marina's name and logo.

Waste Containment and Disposal

Environmental Concerns

All marinas generate some waste; waste that could threaten human health, be hazardous to wildlife, and be costly to coastal communities.

Solid waste, particularly plastics, must be contained. There are many well-documented instances of marine mammals, fish, turtles, and seabirds that have become entangled in or choked on plastic marine debris. Plastics also represent a hazard to navigation as they can snare propellers and clog engine intake systems. Divers are, likewise, susceptible to entanglement. Furthermore, solid waste that washes up on shore is unattractive and may be costly to remove.

In addition to solid waste, marina operators must be concerned about the proper collection and disposal of liquid wastes and of corrosive, reactive, toxic, and/or ignitable materials, *i.e.*, hazardous wastes.



Legal Setting

Marine Plastic Pollution Research and Control Act

The Marine Plastic Pollution Research and Control Act of 1987 (MPPRCA), Title II of Public Law 100-220, restricts the overboard discharge of garbage. Its primary emphasis is on plastics; it is illegal to discharge plastic materials into any waterbody. The disposal of other types of garbage is restricted according to how far a vessel is out to sea. The important thing to remember is that within the Chesapeake and coastal bays, along rivers, and on inland lakes, the discharge of any garbage into the water is illegal. Fish scraps are an exception. The discharge of fish waste into Maryland waters is not desirable, however.

The law also requires that marinas be able to accept garbage from vessels that normally do business with them.

Resource Conservation and Recovery Act and State Hazardous Waste Laws

The Federal Resource Conservation and Recovery Act (RCRA) of 1976 was established to improve the collection, transportation, separation, recovery, and disposal of solid and hazardous waste. Both RCRA and the State haz-

ardous waste law (Environment Article Title 7, Subtitle 1) govern the management of hazardous waste in the State of Maryland.

Hazardous wastes are ignitable, corrosive, reactive, and/or toxic. A list of controlled hazardous wastes can be found in the Code of Maryland Regulations (26.13.02.15-.19).

Hazardous waste "generators" are those individuals or companies that produce greater than 100 kilograms (about 220 pounds or 30 gallons) of hazardous waste during one calendar month or who store more than 100 kg at any one time. The following requirements apply to all hazardous waste generators.

- ◆ All generators and transporters of hazardous waste must apply to the Maryland Department of the Environment (MDE) for an Environmental Protection Agency (EPA) identification number. Use EPA Form 8700-12 (available from MDE).
- ◆ Store hazardous waste in UL listed or Factory Mutual approved containers that are labeled and marked according to Department of Transportation regulations. Refer to 49 CFR 178. Mark the date accumulation begins on each container. Store containers on pallets to prevent corrosion and in an area able to contain any leaks. Keep containers closed unless waste is being added or removed. Inspect containers weekly.
- ◆ Store quantities of waste greater than 100 kg (220 lbs) but less than 500 kg (1,100 lbs) for a maximum of 180 days. Any quantity of waste greater than 500 kg can be stored for a maximum of 90 days.
- ◆ Prepare a written emergency contingency plan if you produce or accumulate more than 100 kg (220 lbs) of hazardous waste. Copies must be given to MDE and local agencies.
- ◆ Document all hazardous waste training in each employee's personnel file. All personnel who handle hazardous waste must receive training to ensure compliance with State regulations.
- ◆ Anybody who sends hazardous waste offsite for treatment, storage, or disposal must prepare a manifest. Ensure that all of the information on the manifest is correct. The hazardous waste manifest must accompany all hazardous wastes "from cradle to grave." It is *your* responsibility to insure that the driver and the vehicle are certified to handle hazardous waste. Each transporter of the hazardous waste must receive and sign the manifest as should the owner or operator of the treatment, storage, or disposal facility. A final copy must be returned to the generator once the waste has been properly treated, stored, or disposed of.
- ◆ Submit a bi-annual report to MDE that summarizes hazardous waste activities during odd numbered years. It is recommended, but not mandatory, to report figures for even numbered years too.
- ◆ Retain all records, including manifests and waste analysis and annual reports, for at least three years. The files must be available for inspection by MDE.

Facilities that generate less than 100 kg of hazardous waste per month and which do not accumulate more than 100 kg of waste at any one time are considered "small quantity generators." Small quantity generators are not



required to register with the EPA. Hazardous waste from small quantity generators should be sent to a disposal facility that is permitted, licensed, or registered by the State to manage municipal or industrial solid waste.

Best Management Practices to Properly Contain and Dispose of Waste

Reduce Waste. In addition to the suggestions offered in the balance of this *Guidebook*, consider the following recommendations to further reduce waste. Keep in mind that less waste means lower disposal costs.

- ❖ Avoid having leftover materials by sizing up a job, evaluating what your actual needs are, and buying just enough product for the job. Encourage boaters to do the same.
- ❖ Minimize office waste: make double-sided copies, use scrap paper for notes and messages, purchase recycled office paper, and reuse polystyrene peanuts or give them to companies that will reuse them, *e.g.*, small scale packing and shipping companies.
- ❖ Request alternative packing material from vendors, *e.g.*, paper, potato starch peanuts, popcorn, etc.
- ❖ Discourage the use of plastic and styrofoam cups, food containers, utensils, and other non-biodegradable products.
- ✧ Encourage boaters to exchange excess paints, thinners, varnishes, etc. To facilitate this type of activity, provide a bulletin board where boaters can post notices that they are seeking particular materials or have an excess of a substance.
- ✧ Post the names of local schools or theater groups that are willing to accept excess, non-toxic paints.

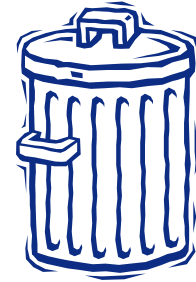
Never dispose of any hazardous substance by dumping it into a sink, floor drain, storm drain, or onto the ground.

Control the Disposal of Fish Waste. When large amounts of fish scraps are deposited in an enclosed area, the resultant, unsightly mess can produce foul odors and a decrease in levels of dissolved oxygen.

- ❖ Establish fish cleaning areas. Adopt one of the following methods to dispose of the waste.
 - Provide a stainless steel sink equipped with a garbage disposal that is connected to a sanitary sewer.
 - Compost fish waste. Proper composting will control the odor and, over time, will produce an excellent soil conditioner that can be used for your landscaping needs. Contact Minnesota Sea Grant for a copy of *Composting Fish Waste* by Thomas Halbach and Dale Baker. This booklet provides instructions for composting 25 five-gallon buckets of fish waste per week using sphagnum peat moss and wood chips.
 - Instruct boaters to place fish scraps in plastic bags and dispose in dumpster or at home.
 - Instruct boaters to dispose fish scraps off shore over deep water.
- ❖ Prohibit fish cleaning outside of designated areas.
- ❖ Post signs directing people to clean their fish at a fish cleaning station or at home.

Manage Trash.

- ❖ Develop your waste management strategy based on the number of patrons, the types of waste generated, the layout of your marina, and the amount of staff time you can devote. Ask boaters specifically what their needs are.
- ❖ Promote your image as a responsible business by providing adequate and reasonably attractive trash receptacles, e.g., cans, bins, dumpsters.
- ❖ Locate trash receptacles in convenient locations. Select high traffic areas such as at the landside foot of the dock, near bathrooms and showers, alongside vending machines, adjacent to the marina office, or on the path to the parking lot.
- ❖ Do not place trash containers on docks as waste may inadvertently be tossed or blown into the water.
- ❖ Select containers that are large enough to hold the expected volume of trash. On average, 4 to 6 gallons of reception capacity is needed per person per vessel per day. A cubic yard of dumpster space holds 216 gallons of trash.
- ❖ Provide lids or some other means to trap the waste inside and to prevent animals and rainwater from getting in.
- ❖ Post signs indicating what may not be placed in the dumpster: engine oil, antifreeze, paints, solvents, varnishes, pesticides, lead batteries, transmission fluid, distress flares, and polystyrene peanuts (loose peanuts tend to blow away).
- ❖ Require all employees to be involved in policing the facility for trash and vessel maintenance wastes. Do not allow litter to mar your grounds or near-shore areas.
- ❖ Use a pool skimmer or crab net to collect floating debris that collects along bulkheads or elsewhere within your marina.
- ✧ Post signs directing people to trash receptacles if they are not in plain view.
- ✧ Provide lights around trash receptacles so that they are easy to find and safe.
- ✧ Plant or construct a windscreen around the dumpster to make the area more attractive and to prevent trash from blowing away. Use native shrubs such as red chokeberry (*Aronia arbutifolia*), spicebush (*Lindera benzoin*) or mountain laurel (*Kalmia latifolia*).



Recycle Whenever Possible. Divert reusable materials out of the waste stream. A recycling program is an easy, highly visible means to demonstrate environmental stewardship. Recycling programs are also a good way to introduce patrons to pollution prevention practices. In fact, many are likely to already be in the habit of recycling at home and may expect to see recycling bins. The added cost of providing recycling facilities may be offset by income derived from the sale of some high quality recyclable items such as lead batteries, office paper, aluminum, and cardboard. Also, you may realize cost savings due to less frequent tipping of your dumpster(s) because of the reduced volume of trash.

- ❖ Contact a waste hauler or your local solid waste recycling coordinator (refer to *Appendix IV*) to learn what materials are collected in your area. The following materials may be recycled: antifreeze, oil, metal fuel filter canisters, solvents, glass, shrink wrap, type 1 and 2 plastics, aluminum,

steel, tin, lead batteries, newspaper, corrugated cardboard, mixed paper, scrap metal, tires, and white goods (appliances).

- ✧ Post information about local recycling services if you are not able to provide all of the desired services at your facility. Refer to *Appendix IV* for county and State recycling contacts. Or, contact Maryland Environmental Service for the nearest used oil and antifreeze recycling center.

Recycle Solid Waste.

- ❖ Provide containers to collect, at a minimum, plastic, glass, and aluminum.
- ❖ Clearly mark each container so people know what may and may not be put in it.
- ❖ Provide lids or some type of restricted opening to prevent the collected material from being lifted out by the wind and to prevent rainwater from collecting inside.
- ❖ Place the collection bins for solid recyclables in convenient locations. High traffic areas near trash receptacles are best.
- ✧ Make the recycling bins look different from the standard trash cans, *e.g.*, use a different color or material.

Recycle Liquid Waste.

- ❖ Provide containers to collect oil and antifreeze. Also, collect solvents from your boatyard according to hazardous waste regulations.
- ❖ Provide separate containers for oil, antifreeze, and solvents.
- ❖ Surround tanks with impervious, secondary containment that is capable of holding 110 percent of the volume of each tank.
- ✧ Try to shelter tanks from the elements.
- ❖ Attach funnels to tanks to reduce chances of spills. Funnels should be large enough to drain portable containers and oil filters.
- ❖ Check with your recycler to learn what materials may be mixed. Generally speaking, engine oil, transmission fluid, hydraulic fluid, and gear oil may all be placed in a waste oil container. Some haulers will also take diesel and kerosene. Ethylene glycol and propylene glycol antifreeze are often collected in the same used antifreeze tank. As a precaution though, **CHECK WITH YOUR RECYCLER BEFORE MIXING ANY MATERIALS.**
- ❖ Post signs indicating what may and may not be placed in each tank.
- ❖ Do not allow patrons to pour gasoline, solvents, paint, varnishes, or pesticides into the oil or antifreeze recycling containers. The introduction of these materials creates a "hazardous waste." The whole tank must be disposed of as hazardous waste: a very expensive undertaking.
- ✧ Consider locking the intake to oil and antifreeze recycling containers to prevent contamination. If you do lock the tanks, instruct your patrons to get the key from the appropriate staff person or to leave their oil or antifreeze next to the collection tank. If you select the second option, assign a member of your staff to inspect the collection site daily for any material that may have been dropped off.
- ❖ Be aware that recycling liquid materials is a long-term obligation. Investigate waste haulers to insure that they do actually recycle the collected material. Maintain shipping manifests for solvents and other hazardous wastes for a minimum of 3 years (manifests are not required for used oil and antifreeze that is being recycled).



Minimize Your Use of Hazardous Products. By minimizing your use of hazardous products, you can reduce health and safety risks to your staff, tenants, and contractors; lower disposal costs; decrease liability; and limit chances that you will be responsible for a costly clean-up of inappropriately disposed material.

- ❖ Avoid using products that are corrosive, reactive, toxic, or ignitable to the greatest extent possible.
- ❖ Adopt an inventory control plan to minimize the amount of hazardous material you purchase, store, and dispose of.
- ❖ Do not store large amounts of hazardous materials. Purchase hazardous materials in quantities that you will use up quickly.
- ❖ Establish a "first-in first-out" policy to reduce storage time. Dispose of excess material every 6 months.

Box 4. How Do You Know if a Substance is Hazardous?

All waste generators must determine whether or not their refuse is hazardous. Use the following steps to determine if you have hazardous waste.

1. It is listed as a hazardous waste in COMAR 26.13.02.15-.19.
 2. The waste exhibits one or more of the characteristics of hazardous materials: ignitability, corrosivity, reactivity, or toxicity. A generator may either test the waste to determine if it exhibits a hazardous characteristic or use knowledge of the waste, *e.g.*, first hand experience or information gathered from a Material Safety Data Sheet. The test for toxicity is called the Toxicity Characteristic Leaching Procedure (TCLP) and is performed by industrial laboratories.
-

Store Solvents and Hazardous Materials with Care.

- ◆ If you have more than a couple small cans of solvents or other hazardous materials, store them in fire-safe containers that are UL listed or Factory Mutual approved. Containers must meet U.S. Department of Transportation standards for protecting against the risks to life and property inherent in the transportation of hazardous materials. Approved containers will carry specification markings (*e.g.*, DOT 4B240ET) in an unobstructed area. Refer to 49 CFR 178 for additional packaging specifications.
- ❖ Small quantities of solvents may be stored in the containers they were purchased in. Keep the storage area neat.
- ◆ Plainly label all stored and containerized material. For hazardous waste, mark the date accumulation begins and ends on each container.
- ◆ Store containers on pallets in a protected, secure location away from drains and sources of ignition. Inspect routinely for leaks.
- ◆ To minimize air pollution, cap solvents and paint thinners whenever not in use. Store rags or paper saturated with solvents in tightly closed, clearly labeled containers.
- ◆ Separate hazardous chemicals by hazardous class. Call MDE at (410) 631-3344 to determine which classes the chemicals you have fall into.
- ❖ Assign control over hazardous supplies to a limited number of people who have been trained to handle hazardous materials and understand the first-in first-out policy.

- ❖ Routinely check the date of materials to prevent them from outlasting their shelf life.
- ❖ Call the State Fire Marshal's Office at 800-525-3124 to schedule a "basic fire inspection." The inspection will determine whether you are meeting the state fire code, including hazardous material storage requirements.

Follow Recommended Disposal Methods. The following table contains information about recommendations for the proper disposal of wastes typically found at marinas. Refer to *Appendix IV* for lists of recyclers and hazardous waste haulers.

Table 2. Recommended Disposal Methods

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Antifreeze <ul style="list-style-type: none"> • Propylene glycol • Ethylene glycol <i>Contact your waste hauler to confirm that they will accept mixed antifreeze.</i>	✓ Recycle. <ul style="list-style-type: none"> • Hire a waste hauler to collect and dispose. • Purchase an on-site recovery unit. Distillation systems are more expensive than filtration systems but are more efficient at renewing used antifreeze.
Waste Oil <ul style="list-style-type: none"> • Engine oil • Transmission fluid • Hydraulic oil • Gear oil • #2 Diesel • Kerosene <i>Contact your waste hauler to confirm that they will accept mixed oil.</i>	✓ Recycle. <ul style="list-style-type: none"> • Use waste oil for space heating (subject to regulations under COMAR 26.13 and 26.11). • Take small quantities to a household hazardous waste collection day.
Quart Oil Cans	✓ Drain completely and dispose in regular trash. They cannot be recycled.
Non-terneplated Fuel Filters	✓ Puncture and completely hot drain for at least 12 hours. Recycle the oil and the metal canister. <ul style="list-style-type: none"> • If you do not recycle the canister, double-bag it in plastic and place it in your regular trash.
Terneplated Fuel Filter (used in heavy equipment and heavy-duty trucks)	✓ Dispose of as hazardous waste (contain lead).
Stale Gasoline	✓ Add stabilizer in the winter to prevent it from becoming stale or an octane booster in the spring to rejuvenate it. Use the fuel. <ul style="list-style-type: none"> • Mix with fresh fuel and use. • Hire a hazardous waste hauler to collect and dispose of. A hazardous waste manifest is required. • Take small quantities to a household hazardous waste collection day. • Baltimore County Resource Recovery Facility will take stale gasoline from Baltimore County residents year round.

Table 2. Recommended Disposal Methods, page 2 of 4

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Kerosene	✓ Filter and reuse for as long as possible then recycle.
Mineral Spirits	✓ Filter and reuse.
Solvents <ul style="list-style-type: none"> • Paint and engine cleaners such as acetone and methylene chloride 	✓ Reuse as long as possible and then recycle. <ul style="list-style-type: none"> • Dispose of as hazardous waste.
Sludge Recovered from a Solvent Listed as a Hazardous Waste Under COMAR 26.13.02.15-.19	✓ Dispose of as hazardous waste.
Sludge Recovered from a Solvent Not Listed as a Hazardous Waste Under COMAR 26.13.02.15-.19 and Which Does Not Exhibit Hazardous Characteristics	✓ Let sludge dry in a well-ventilated area, wrap in newspaper, and dispose in garbage.
Paints and Varnishes: <ul style="list-style-type: none"> • Latex • Water-based • Oil-based 	✓ Allow to dry completely. Dispose in regular trash. <ul style="list-style-type: none"> • Use leftover material for other projects, <i>i.e.</i>, as an undercoat for the next boat. • Encourage tenants to swap unused material.
Paint Brushes	✓ Allow to dry completely. Discard in regular trash.
Paint Filters	✓ Allow to dry completely prior to disposal. Treat as hazardous waste if paint contains heavy metals above regulatory levels.
Rags Soaked with Hazardous Substances	✓ Keep in covered container until ready to dispose. Dispose of the solvent that collects in the bottom of the container as hazardous waste. ✓ Wring rags out over a collection receptacle and have laundered by an industrial laundry. <ul style="list-style-type: none"> • If rags fail TCLP test, dispose of as hazardous waste.
Used Oil Absorbent Material	✓ If it is saturated with oil or diesel, double bag it in plastic and discard in trash (as long as no petroleum is leaking). ✓ If it is saturated with gasoline, allow it to air dry and reuse.
Used Bioremediating Bilge Booms	✓ Dispose in regular trash as long as no liquid is dripping. Because the microbes need oxygen to function, do not seal in plastic.
Epoxy and polyester resins	✓ Catalyze and dispose of as solid waste.

Table 2. Recommended Disposal Methods, page 3 of 4

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Glue and Liquid Adhesives	✓ Catalyze and dispose of as solid waste.
Containers <ul style="list-style-type: none"> • Paint cans • Buckets • Spent caulking tubes • Aerosol cans 	<ul style="list-style-type: none"> ✓ May be put in trash can as long as: <ul style="list-style-type: none"> • All material that can be removed has been. Be sure no more than 1" of residue is on the bottom or inner liner. • Containers that held compressed gas are at atmospheric pressure. • Containers that held acute hazardous waste have been triple rinsed with solvent. Properly dispose of the solvent.
Residue from Sanding, Scraping, and Blasting	✓ Dispose of as solid waste.
Residue from Pressure Washing	✓ Dispose of as solid waste.
Lead Batteries	<ul style="list-style-type: none"> ✓ Recycle or sell to scrap dealers. Store on an impervious surface, under cover. Protect from freezing. Check frequently for leakage. • Inform boaters that if they bring their old battery to a dealer, they will receive a \$5 refund on a new battery.
Expired Distress Signal Flares	<ul style="list-style-type: none"> ✓ Encourage boaters to keep onboard as extras. ✓ Store in well-marked, fire safe container. Use expired flares to demonstrate to boaters how they are used. Be sure to notify the fire department and Coast Guard ahead of time—especially if using aerial flares. Conduct the demonstration over water. • Encourage boaters to bring to local fire department or household hazardous waste collection day.
Scrap Metal	✓ Recycle.
Light Bulbs <ul style="list-style-type: none"> • Fluorescent bulbs • Mercury vapor lamps • High-pressure sodium vapor lamps • Low-pressure sodium vapor lamps • Metal halide lamps 	<ul style="list-style-type: none"> ✓ Recycle if you have more than 10 to dispose of. • If fewer than 10, treat as solid waste.
Refrigerants	<ul style="list-style-type: none"> ✓ Recycle. If you deal with AC, you must be certified and use EPA approved CFC recovery and recycling equipment. • Use alternative refrigerants: HCFC-22 (for ACS and electric chillers), HCFC-123 (replaces CFC-11), HFC-134A (replaces CFC-12).

Table 2. Recommended Disposal Methods, page 4 of 4

Waste	Disposal Options If multiple options are listed, the first option (✓) is the preferred method
Monofilament Fishing Line	✓ Recycle through a manufacturer or tackle shop.
Scrap Tires	✓ Recycle. Need to register with MDE if you will be collecting more than 50 tires. See COMAR 26.04.08. Store according to National Fire Protection Association Standards.
Pesticides	✓ Dispose of as hazardous waste.
Plastic Shrink Wrap	✓ Recycle.
Fish Waste	✓ Prohibit disposal of fish waste into confined marina waters. Establish a fish cleaning station and adopt one of the following disposal methods: <ul style="list-style-type: none"> • Equip the cleaning station with a garbage disposal connected to municipal sewer. • Compost the scraps. • Instruct boaters to bag scraps in plastic and place in a dumpster or bring home. • Instruct boaters to dispose scraps off shore over deep water.

Track Pollution Incidents.

- ✧ Copy and use the *Pollution Report and Action Log* included at the end of this chapter to track pollution incidents and actions taken.
- ✧ Post the *Log* on a clipboard in the maintenance area or another easily accessible location.
- ✧ Consult the *Pollution Report and Action Log* daily.

Educate Boaters.

- ❖ Photocopy the *Waste Containment and Disposal* tip sheet from the back of this book and distribute it to your customers. There is room to add your marina's name and logo.
- ✧ Contact the Ocean Conservancy for marine debris educational materials at minimal cost.
- ✧ Post information about county Household Hazardous Waste Collection events and recycling centers. See *Appendix IV* for a list of local coordinators.

Information Sources

Appendix I

Maryland
Department of the
Environment

- Emergency Response Division
- Enforcement
- Hazardous Waste Program
- Recycling Office

Maryland
Environmental
Service

Minnesota Sea
Grant College
Program

Ocean
Conservancy

State Fire
Marshal's Office

Appendix IV

Recycling
Coordinators

Appendix X

Waste Gasoline
Haulers

Pollution Report and Action Log

Report Date	Staff Reporting	Problem Description	Action Taken	Action Date	Staff Handling

Marina Management

Once you have adopted some of the best management practices outlined in this *Guidebook*, tell people about it! Train your staff so that they will routinely minimize pollution. Inform boaters how their actions can effect water quality. And let the public know that you are doing your part to protect the environment.



Staff Training

Stormwater Pollution Prevention Plan. The General Permit for Discharges from Marinas requires that you teach your employees about the components and goals of the stormwater pollution prevention plan. The training must be conducted at least twice a year and must address the following topics as applicable.

- ◆ Used oil management
- ◆ Spent solvent management
- ◆ Proper disposal of spent abrasives
- ◆ Disposal of vessel wastewater
- ◆ Spill prevention and control
- ◆ Fueling procedures
- ◆ General good housekeeping
- ◆ Painting and blasting procedures
- ◆ Used battery management

Also, provide training on the proper use of equipment such as dustless sanders and high-volume low-pressure spray guns. Refer to *Appendix XI* for a training guide to help you organize and track your employee training.

Emergency Response Plans. During a real emergency— when time is of the essence— you will want people to know what to do and how to do it.

- ❖ Review plans and response procedures with staff at the beginning of each boating season.
- ❖ Train employees in the use of containment measures.
- ❖ Run emergency response drills at least twice annually.
- ✧ Invite the U.S. Coast Guard and local fire department to demonstrate emergency response procedures at your marina.

Be Watchful. Involve all employees in policing your marina for waste. Encourage your staff to look for and immediately halt the following activities.

- ✧ Colored plumes in the water where a hull is being cleaned.
- ✧ Bilge water discharge with a sheen.
- ✧ Uncontained sanding, painting, varnishing, or cleaning.
- ✧ Maintenance debris being washed into the water.
- ✧ Sewage discharges within the marina.
- ✧ The use of environmentally harmful cleaning products.

Approach Polluters.

- ❖ Determine who will address boaters and contractors who are polluting. Generally speaking, this is a job for the manager. Let your staff know whether they should handle polluters themselves or report pollution incidents to the manager.
- ❖ Politely inform boaters and contractors why what they are doing is harmful. Describe a more environmentally sensitive method and ask the boater or contractor to stop work until it can be done with less environmental impact. It will be easier to get cooperation if you require boaters and contractors to practice pollution prevention as a condition of their contracts.
- ❖ If the problem persists, take these additional steps
 - Talk to the boater or contractor again.
 - Mail a written notice asking that the harmful practice stop. Keep a record of the mailing.
 - Remove the problem from the dock. Charge the boater or contractor for the cost of removal and clean-up.
 - Ask the tenant or contractor to leave your marina.

Investigate Community College Offerings.

- ❖ Look for college courses related to environmental protection. For example, Anne Arundel Community College has offered a course titled *Environmental Compliance for Marinas and Boatyards*.

Maintain Training Records.

- ❖ Record training dates, topics, and names of employees and instructors.
- ❖ Keep copies of instructional material.

Inform Patrons and Independent Contractors

The General Permit for Discharges from Marinas requires that customers and contractors be informed about pollution control practices and be required to use them.

Incorporate Best Management Practices into Contracts. In addition to being a legal document, contracts are very effective educational tools. Use the contract to inform boaters and contractors how to minimize their environmental impacts.

- ❖ Include language requiring the use of best management practices in all of your contracts: slip holders, liveaboards, transients, charters, workers, contractors, and tenants.
- ❖ Include language specifying the consequences for not using best management practices, *e.g.*, failure to use best management practices will result in expulsion from the marina and forfeiture of rental fees.
- ❖ Include information about requirements for Marine Sanitation Devices.
- ✧ See *Appendix V* for sample contract language. Call the Department of Natural Resources if you would like to receive an electronic copy of the contract language.

If a boater is sanding and not containing the debris, bring a vacuum sander to him or her. Explain that it collects most of the dust and allows one to work more quickly. Charge him or her your standard rental fee for the equipment.

Post Signs Detailing Best Management Practices.

- ❖ Post signs at fuel docks and pumpout stations, along piers, in vessel maintenance areas, and at dumpsters and recycling stations. See samples below.
- ❖ Be sure the signs are visible.
- ❖ Signs must be durable, eye catching, and appropriately sized.
- ❖ Post your facility's environmental policy in a conspicuous location.

Keep Fuel Out of the Water

Do Not Top Off Tank
Listen to Anticipate When Tank is Full
Wipe-up Spills Immediately

OIL SPILL RESPONSE KIT



Include name and number of person to contact at the marina in case of a spill

Be sure that a copy of the Oil Spill Response Plan is clearly visible inside the Spill Response Kit

Notice

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon, or discoloration of, the surface water. Violators are subject to a penalty of \$5,000.

The use of soaps to disperse oil is illegal. Violators may be fined up to \$25,000 per incident.

Report Oil Spills to
USCG at (800) 424-8802 and
MDE at (410) 974-3551

Vessel Maintenance Area

- All major repairs (e.g., stripping, fiberglassing) must be performed in the Vessel Maintenance Area
- All blasting and spray painting must be performed within the enclosed booth or under tarps
- Use tarps or filter fabric to collect paint chips and other debris
- Use vacuum sander (*include rental information if appropriate*)
- Use high-volume low-pressure spray guns (*include rental information if appropriate*)
- Use drip pans with all liquids
- Reuse solvents
- Store waste solvents, rags, and paints in covered containers

Pumpout Station

- *Instructions for use*
- *Hours of operation*
- *Fee*
- *Name and number of person to call in case of malfunction*

Do Not Discharge Sewage

Please use our clean, comfortable restrooms while you are in port

Nutrients and pathogens in sewage impair water quality

Think Before You Throw

The following items may not be placed in this dumpster

- Oil
- Antifreeze
- Paint or varnish
- Solvents
- Pesticides
- Lead batteries
- Transmission fluid
- Distress flares
- Loose polystyrene peanuts
- Hazardous waste

Recycle

Oil	Mixed paper
Antifreeze	Newspaper
Lead batteries	Solvents
Glass	Steel
Plastic	Scrap metal
Aluminum	Tin
Corrugated cardboard	Tires
Metal fuel filter canisters	

Indicate which items you recycle and where the collection sites are

Include information about local recycling services for materials that you do not collect

Recycle Oil

This container is for

- Engine oil
- Transmission fluid
- Hydraulic fluid
- Gear oil
- #2 Diesel
- Kerosene

Tailor to fit your hauler's requirements

Gasoline is STRICTLY PROHIBITED

If container is locked, include information about where to find the key or leave the oil

Recycle Antifreeze

This container is for

- Ethylene glycol antifreeze
- Propylene glycol antifreeze

Tailor to fit your hauler's requirements

Gasoline, diesel, kerosene, and all other materials are STRICTLY PROHIBITED

If container is locked, include information about where to find the key or leave the antifreeze

No Fish Scraps

Please do not discard fish scraps within the marina basin

- Use our fish cleaning station
- Bag the scraps and dispose in dumpster or at home
- Save and dispose over deep water

Marine Sanctuary

This marina provides food and shelter for young fish

- Prevent oil spills!
- Keep bilge clean!
- Use oil sorb pads!

Help by recycling or properly disposing of used oil, antifreeze, solvents, cleaners, plastics, and other wastes.

Environmental Policy

It is the policy of this marina to protect the health of our patrons, staff, and the environment by minimizing the discharge of pollutants to the water and air.

**Thank you for
keeping
the Bay
clean and safe!**

Distribute Literature to Patrons.

- ❖ Copy and distribute the *Clean Boating Tip Sheets* included in this *Guidebook* or create your own. Boater tip sheets on Vessel Maintenance, Selecting a Bottom Paint, Underwater Hull Cleaning, Petroleum Control, Boat Sewage, and Waste Disposal can be found at the end of this book.
- ❖ Send the tip sheets with monthly mailings or place in dock boxes or on vessels. Be cautious that they do not end up in the water.
- ❖ Include articles about best management practices in your newsletter.
- ❖ Get copies of clean boating materials from organizations such as the Chesapeake Bay Foundation, the Ocean Conservancy, and BoatU.S. Foundation.
- ❖ Contact the United States Coast Guard for publications summarizing Federal boating requirements.

Host a Workshop.

- ❖ Include a walking tour of the facility to demonstrate best management practices.
- ❖ Try to schedule the workshop to coincide with an existing marina function that is traditionally well attended.
- ❖ Offer incentives to attendees: door prizes, discounts, product samples, food.

Make Use of Informal Communication Mechanisms.

- ❖ Pass along pollution prevention information in conversations with patrons and contractors.
- ❖ Post information about best management practices on the marina bulletin board.

Recognize Boaters.

- ❖ Publicly recognize boaters who are making an effort to control pollution.
- ❖ Include a feature in your newsletter, post a flyer with the boater's picture on a public bulletin board, give an award, etc.

Public Relations

Publicize Your Good Deeds.

- ❖ Seek free publicity with local press, magazines, television, and radio outlets.
- ❖ Prepare news releases to highlight your innovative practices, new equipment or services, available literature, or a workshop you are sponsoring.
- ❖ Plan news releases to coincide with seasonal activities, *e.g.*, helpful tips for winterization.
- ❖ Start news releases with a contact person's name and phone number, the date, and a headline. The first paragraph should contain vital information: who, what, when, and where. Fill in with secondary information and support data. Conclude with a "call to action" (*e.g.*, visit the marina for a demonstration of the new plastic media blasting system). Double-space the text. One page is best. It should be no longer than two pages. Refer to the *Associated Press Style Book* for additional formatting information.
- ❖ Learn media deadlines and send releases in time to meet them.
- ❖ When submitting a news release, be sure you have the name of the correct editor and that it is spelled accurately.
- ❖ Get press kits from manufacturers of environmentally-sensitive products. Use their photographs and product information.

Become a Maryland Clean Marina.

- ❖ Apply to the Maryland Department of Natural Resources for recognition as a Maryland Clean Marina. Once you have satisfied the selection criteria, you may use the Maryland Clean Marina logo in your advertising and correspondence, fly a Clean Marina flag, and enjoy promotion by the Clean Marina Initiative in publications, on the World Wide Web, and at public events.
- ❖ Use your selection into the program as an opportunity to prepare a press release.

Business Practices

Offer Environmental Audits for Boaters.

- ❖ Expand your business by selling environmental audits.
- ❖ Inspect engines, bilges, fuel systems, and marine sanitation devices.
- ❖ Sell oil absorbent pads, air/fuel separators, etc.

Consider Environmental Surcharges.

- ❖ Charge for tangible items such as tarps, vacuum sanders, and protective clothing or establish a flat "environmental surcharge" on all jobs.

Information Sources

Appendix I

BoatU.S.
Foundation

Chesapeake Bay
Foundation

Maryland
Department of
Natural Resources
• Waterway
Resources
Division

Ocean
Conservancy

United States
Coast Guard

✧ Consider donating a portion of rental fees (*e.g.*, for vacuum sanders) to an environmental organization. The boater can feel good about controlling pollution and about the fact that a portion of his or her money is going to help conserve nature.

Be Diligent.

❖ Be absolutely diligent in containing pollution; your own and that created by your staff. Boaters will notice and follow your example.

Laws and Regulations

This chapter of laws, regulations, and permit information is by no means comprehensive. It is meant to provide:

- an introduction to the responsibilities of certain Federal and State agencies,
- an overview of some relevant laws,
- a look at the General Permit for Discharges from Marinas, and
- a synopsis of information about other pertinent permits and licenses.



Selected Federal Agencies and Their Jurisdictions

The **Environmental Protection Agency (EPA)** is responsible for ensuring that environmental protections are considered in U.S. policies concerning economic growth, energy, transportation, agriculture, industry, international trade, and natural resources; ensuring national efforts to reduce environmental risk are based on the best available scientific information; and providing access to information on ways business, state and local governments, communities, and citizens can prevent pollution and protect human health and the environment. The Office of Water is responsible for implementing, among other laws, the Clean Water Act, portions of the Coastal Zone Act Reauthorization Amendments of 1990, the Resource Conservation and Recovery Act, and the Marine Plastics Pollution Research and Control Act. Activities are targeted to prevent pollution wherever possible and to reduce risk to people and ecosystems in the most cost effective manner.

The mission of the **National Oceanic and Atmospheric Administration (NOAA)**, an agency within the U.S. Department of Commerce, is to describe and predict changes in the earth's environment and to conserve and wisely manage the nation's coastal and marine resources to ensure sustainable economic opportunities. NOAA provides a wide range of observational, assessment, research, and predictive services for estuarine and coastal ocean regions. NOAA has developed an array of programs to address national-scale estuarine issues and specific problems affecting individual estuarine and coastal ocean systems. In partnership with EPA, NOAA implements the Coastal Zone Act Reauthorization Amendments of 1990.

The **United States Army Corps of Engineers (COE)** is responsible for ensuring adequate flood control, hydropower production, navigation, water supply storage, recreation, and fish and wildlife habitat. The Corps contracts and regulates coastal engineering projects, particularly harbor dredging and beach renourishment projects. They also review and permit coastal development and artificial reef projects. A joint permit from the Maryland Department of the Environment and the Army Corps of Engineers is required for all dredging projects.

The **United States Coast Guard**, an arm of the U.S. Department of Transportation, protects the public, the environment, and U.S. economic interests. They promote maritime safety and marine environmental protection, enforce maritime law, tend all Federal navigation aids, and regulate and monitor recreational and commercial vessels and waterfront facilities.

Selected State Agencies and Their Jurisdictions

The **Critical Area Commission** works with local contacts to implement the Chesapeake Bay Critical Area Act. The Act is designed to protect the Chesapeake Bay and its tributaries from resource degradation by mandating land use restrictions within 1,000 feet of mean high water or from the edge of tidal wetlands.

The mission of the **Maryland Department of Natural Resources (DNR)** is to “inspire people to enjoy and live in harmony with their environment, and to protect what makes Maryland unique— our treasured Chesapeake Bay, our diverse landscapes and our living and natural resources.” DNR coordinates all natural resources activities within the State affecting the State’s bays and tributaries, fisheries, forests, parks, wildlife, and geology. The Department oversees State land acquisition and management and historic preservation. Additionally, DNR reviews and evaluates all natural resources policies, plans, programs, and practices of county, State, regional, and Federal agencies, and institutions. The Maryland Natural Resources Police serve to preserve and protect Maryland’s natural resources and its citizens by enforcing all conservation, boating, and criminal laws and by serving as the primary search and rescue agency on Maryland waters and in remote areas of the State. DNR is the lead agency for the Clean Marina Initiative and is responsible for the Sewage Pumpout Program.

The **Maryland Department of the Environment (MDE)** seeks to protect and restore the quality of Maryland’s air, land, and water resources while fostering economic development, healthy and safe communities, and environmental education for the benefit of the environment, public health, and future generations. MDE oversees the restoration and maintenance of ground and surface waters and wetland habitats. They provide technical and scientific analysis and data for regulatory activities, make environmental risk assessments, monitor air pollutant levels, develop strategies and regulations to control air emissions, oversee toxic and hazardous waste clean up, and coordinate emergency response activities. Most State environmental permits are issued by MDE. The Environmental Permits Service Center is available to help business owners identify and comply with applicable permits.

Maryland Environmental Service (MES) is a quasi-public water, wastewater, and solid waste management utility offering planning, management, financing, design, construction, and operations and maintenance services. When MES was created in 1970, it was directed “to encourage reduction in the amount of waste generated and discharged to the environment.” Maryland Environmental Service maintains the 1-800-4-RECYCLE hotline.

Maryland Environmental Trust (MET) promotes growth management— the protection of rural areas and significant resources— to discourage sprawling development patterns. Among other programs, MET operates a conservation easement program. A conservation easement is an agreement between a landowner and the Trust ensuring that a property will not be developed beyond an agreed limit. The agreement provides for permanent protection of significant natural resources and can create income, estate, and property tax benefits to the landowner without detriment to rights of ownership, occupancy, and privacy.

Selected Federal Laws that Impact Marinas

Clean Air Act Amendments, 1990

As a result of the 1990 Clean Air Act Amendments, the “gasoline marine final rule” establishes emission standards for new spark-ignition gasoline marine engines. Outboard engines and gasoline marine engines used in personal watercraft and jet boats are covered by the rule. Because sterndrive and inboard engines offer cleaner technologies, emission standards were not set for these types of engines.

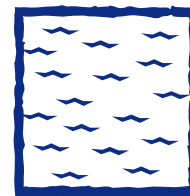
Boat engines currently in use are not affected by this regulation. Boat owners are in no way responsible for making modifications to their current engines to meet the standards. Likewise, boat dealers are not responsible for compliance with this regulation. The regulation does require that manufacturers of outboard and personal watercraft marine engines achieve yearly emission reductions by meeting a corporate average emission standard which allows them to build some engines to emission levels lower than the emission standard and some engines to emission levels higher than the standard, provided the manufacturer’s overall corporate average is at or below the standard.

Clean Vessel Act (CVA)

The Clean Vessel Act (CVA) provides funds to states to construct, renovate, and operate marine sewage pumpout stations and to conduct boater environmental education. Contact the Maryland Department of Natural Resources for information about receiving up to \$15,000 in grant funding to install a pumpout system.

Coastal Zone Act Reauthorization Amendments of 1990 (CZARA)

The Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) provided the impetus for the Maryland Clean Marina Initiative. Section 6217 of the Amendments require that nonpoint source pollution from marinas be contained. Through the Clean Marina Initiative, Maryland is promoting voluntary adoption of best management practices to minimize the impact of marinas on surrounding land and water.



Federal Water Pollution Control Act

The Federal Water Pollution Control Act, commonly known as the Clean Water Act, addresses many facets of water quality protection. It provides the authority for the National Pollutant Discharge Elimination System (NPDES) permit program for point sources of pollution. The Act prohibits the discharge of oil or hazardous substances into U.S. navigable waters. It also prohibits the use of chemical agents like soaps, detergents, surfactants, or emulsifying agents to disperse fuel, oil, or other chemicals without the permission of the U.S. Coast Guard.

All vessels 26 feet in length and over are required to display a placard that is at least 5 by 8 inches, made of durable material, and fixed in a conspicuous place in the machinery spaces or at the bilge pump control station. The placard must read:

Discharge of Oil Prohibited

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are subject to a penalty of \$5,000.

The Clean Water Act requires that the U.S. Coast Guard be notified anytime a spill produces a sheen on the water. Failure to report a spill may result in civil penalties. Report spills to (800) 424-8802.

Furthermore, the Act prohibits the discharge of raw sewage within U.S. waters and requires that all recreational boats with installed toilets have an operable marine sanitation device on board (see “State Laws” below).

Marine Plastic Pollution Research and Control Act (MPPRCA)

The Marine Plastic Pollution Research and Control Act (MPPRCA) is the U.S. law that implements an international pollution prevention treaty known as MARPOL. The MPPRCA of 1987 (Title II of Public Law 100-220) restricts the overboard discharge of garbage. Its primary emphasis is on plastics; it is illegal to dispose of plastic materials into the water anywhere. The disposal of other garbage is restricted according to a vessel’s distance from shore.

- ◆ Within U.S. lakes, rivers, bays, sounds, and within 3 nautical miles from shore, it is illegal to dump plastic, paper, rags, glass, metal, crockery, dunnage (lining and packing material, nets, lines, etc.), and food.
- ◆ Between 3 and 12 nautical miles from shore, it is illegal to dump plastic and any other garbage that is greater than one inch in size.
- ◆ Between 12 and 25 nautical miles from shore, it is illegal to dump plastic and dunnage.
- ◆ Beyond 25 nautical miles, it is illegal to dump plastic.

The dumping restrictions apply to *all* vessels operating in *all* navigable waters of the United States and the 200 mile Exclusive Economic Zone. All vessels greater than 26 feet must display a MARPOL placard outlining the garbage dumping restrictions. All vessels over 40 feet must also have a written waste management plan on board.

Under the national law, ports and terminals, including recreational marinas, must have adequate and convenient “reception facilities” for their regular customers. That is, marinas must be capable of receiving garbage from vessels that normally do business with them (including transients).

Oil Pollution Act of 1990 (OPA)

The Oil Pollution Act of 1990 (OPA) was written in direct response to the *Exxon Valdez* oil spill. The law primarily addresses commercial oil shipping (*e.g.*, tankers must be double-hulled, captains may lose their licenses for operating a vessel under the influence of drugs or alcohol). Some of the requirements are applicable to recreational boating, however. Most notably, the responsible party for any vessel or facility that discharges oil is liable for the removal costs of the oil and any damages to natural resources; real or personal property; subsistence uses; revenues, profits, and earning capacity; and public services like the cost of providing increased or additional public services. The financial liability for all non-tank vessels is \$600 per gross ton, or \$500,000, whichever is greater. Also, substantial civil penalties may be imposed for failing to report a spill, for discharging oil, for failure to remove oil, failure to comply with regulations, and gross negligence.

Organotin Antifoulant Paint Control Act (OAPC) of 1988

The Organotin Antifoulant Paint Control Act restricts the use of organotin antifouling paints, including tributyl tin-based paints. Tributyl tin (TBT) paints may be used only on aluminum-hulled vessels, on boats larger than 82 feet (25 meters), and on outboard motors and lower drive units. Under the provision of the State antifoulant paint law (Agriculture Article §5-901) marina operators must obtain a license from the Maryland Department of Agriculture to purchase and apply organotin antifouling paints and hire a certified pesticide applicator. It is illegal for anybody without a license to distribute, sell, use, or possess antifoulants containing tributyl tin. The only exception is for private use of spray cans that are 16 ounces or less and which do not exceed the release rate of less than or equal to 5.0 micrograms per square centimeter per day.

Refuse Act of 1899

The Refuse Act of 1899 prohibits throwing, discharging, or depositing any refuse matter of any kind (including trash, garbage, oil, and other liquid pollutants) into waters of the United States.

Resource Conservation and Recovery Act (RCRA)

The Federal Resource Conservation and Recovery Act (RCRA) provides the legal authority to establish standards for handling, transporting, and disposing of hazardous wastes. The Maryland hazardous waste regulations are based on RCRA and the State Environment Article.

Hazardous wastes are ignitable, corrosive, reactive, and/or toxic. Hazardous waste “generators” are those individuals or companies that produce greater than 100 kilograms (about 220 pounds or 30 gallons) of hazardous waste during one calendar month or who store more than 100 kg at any one time. The following requirements apply to all hazardous waste generators.

- ◆ All generators and transporters of hazardous waste must apply to the Maryland Department of the Environment (MDE) for an Environmental Protection Agency (EPA) identification number. Use EPA Form 8700-12 (available from MDE).
- ◆ Store hazardous waste in UL listed or Factory Mutual approved containers that are labeled and marked according to Department of Transportation regulations (refer to 49 CFR 178). Mark the date accumulation begins on each container. Store containers on pallets to prevent corrosion in an area able to contain any leaks. Keep containers closed unless waste is being added or removed. Inspect containers weekly.



- ◆ Store quantities of waste greater than 100 kg (220 lbs) but less than 500 kg (1,100 lbs) for a maximum of 180 days. Any quantity of waste greater than 500 kg can be stored for a maximum of 90 days.
- ◆ Prepare a written emergency contingency plan if you produce or accumulate more than 100 kg (220 lbs) of hazardous waste. Copies must be given to MDE and local agencies.
- ◆ Document all hazardous waste training in each employee's personnel file. All personnel who handle hazardous waste must receive training to ensure compliance with the State regulations.
- ◆ Anybody who sends hazardous waste offsite for treatment, storage or disposal must prepare a manifest. Ensure that all of the information on the manifest is correct. The hazardous waste manifest must accompany all hazardous wastes "from cradle to grave." It is *your* responsibility to insure that the driver and the vehicle are certified to handle hazardous waste. Each transporter of the hazardous waste must receive and sign the manifest as should the owner or operator of the treatment, storage, or disposal facility. A final copy must be returned to the generator once the waste has been properly treated, stored, or disposed.
- ◆ Submit a bi-annual report to MDE that summarizes hazardous waste activities during odd numbered years. It is recommended, but not mandatory, to report figures for even numbered years too.
- ◆ Retain all records, including manifests and waste analysis and annual reports, for at least three years. The files must be available for inspection by MDE.

Facilities that generate less than 100 kg of hazardous waste per month and which do not accumulate more than 100 kg of waste at any one time are considered "small quantity generators." Small quantity generators are not required to register with the EPA. Hazardous waste from small quantity generators should be sent to a disposal facility that is permitted, licensed, or registered by the State to manage municipal or industrial solid waste.

Selected State Laws that Impact Marinas

Marine Sanitation Devices

The Federal Clean Water Act and Maryland State law (Natural Resources Article §8-741) require that any vessel with an installed toilet be equipped with a certified Type I, Type II, or Type III marine sanitation device (MSD):

- *Type I* systems mechanically cut solids, disinfect the waste with a chemical additive or with chlorine disassociated from salt water with an electronic jolt, and discharge the treated sewage overboard. The fecal coliform bacteria count of the effluent may be no greater than 1,000 per 100 milliliters and may not contain any floating solids.

- *Type II* systems are similar to Type I systems except that the Type IIs treat the sewage to a higher standard: effluent fecal coliform bacteria levels may not exceed 200 per 100 milliliters, and total suspended solids may not be greater than 150 milligrams per liter. Type IIs also require more space and have greater operating energy requirements.
- *Type III* systems do not allow sewage to be discharged. The most common form of a Type III system is a holding tank. Other forms include recirculating and incinerating systems.

Vessels 65 feet and under may have any of the three types of MSDs. Vessels over 65 feet must have a Type II or III system. Additionally, Type I and Type II systems must display a certification label affixed by the manufacturer. A certification label is not required on Type III systems.

The State law allows a vessel with an installed toilet to have a “Y” valve or other means to by-pass the sanitation system. Within State waters, including the entire Chesapeake Bay and its tributaries, however, all pathways for overboard discharge of raw sewage must be secured. The “Y” valve may be secured with a padlock or a non-reusable nylon tie known as a wire tie. Alternatively, the valve handle can be moved to the closed position and removed.

Finally, any vessel with an installed toilet that is offered in Maryland as a noncaptained charter must be equipped with an operational MSD. The lease agreement signed by the leasing party must include a paragraph outlining the operator’s responsibility under Natural Resources Article §8-741.

Pumpout Systems

Maryland law, Environment Article §9-333, requires the following types of facilities to have pumpout stations.

- ◆ Existing marinas wishing to expand to a total of 11 or more slips and that are capable of berthing vessels that are 22 feet or larger.
- ◆ New marinas with more than 10 slips and that are capable of berthing vessels that are 22 feet or larger.
- ◆ Marinas with 50 or more slips and that berth any vessel over 22 feet in length. Marinas with 50 or more slips must be able to accept waste from portable toilets as well as from holding tanks.



Pollutant Discharge Prohibited

State Environment Article §9-322 prohibits the discharge of any pollutant into State waters without a discharge permit.

Chesapeake Bay Critical Area Act

Maryland enacted the Chesapeake Bay Critical Area Protection Program (Natural Resources Article §8-1801-1816 and COMAR, Title 27) in 1984. The program minimizes damage to water quality and natural habitats by fostering more sensitive development along the Chesapeake Bay. The Critical Area Law is meant to:

- ◆ minimize adverse impacts on water quality that result from pollutants that are discharged from structures or conveyances or that have runoff from surrounding lands;
- ◆ conserve fish, wildlife, and plant habitat; and
- ◆ establish land use policies for development in the Chesapeake Bay Critical Area which accommodate growth and also address the fact that, even if pollution is controlled, the number, movement, and activities of persons in that area can create adverse environmental impacts.



The Critical Area encompasses all waters and submerged lands of Chesapeake Bay to the head of tide and all lands and waters within 1,000 feet of mean high water or from the edge of tidal wetlands. The 100 feet of land closest to the mean high water line is a nearly development-free buffer. Only “water-dependent” facilities, like marinas, are permitted in the buffer. An activity is water-dependent if it cannot exist outside of the buffer and is dependent on the water by the intrinsic nature of its operation (COMAR 27.01.03.01). Non-water dependent structures associated with marinas, such as tackle shops or dry storage areas, are not permitted in the buffer. The siting of marinas is further restricted to Intensely Developed Areas and Limited Development Areas within the Critical Area.

In a given area, the Critical Area is designated as one of three land-use zones: Intensely Developed Areas (IDAs), Limited Development Areas (LDAs), and Resource Conservation Areas (RCAs). New marinas and commercial boat docking facilities normally are not permitted in Resource Conservation Areas. New or expanded marinas generally are allowed in Intensely Developed Areas and Limited Development Areas provided that it can be shown that:

- ◆ they are water-dependent;
- ◆ the project meets a recognized private right or public need;
- ◆ adverse effects on water quality and fish, plant, and wildlife habitat are minimized;
- ◆ insofar as possible, nonwater-dependent structures or operations associated with water-dependent projects or activities are located outside the buffer; and
- ◆ the facilities are consistent with an approved local water-dependent facilities plan as specified in COMAR 27.01.03.03.

Critical Area criteria require that the impacts of any development or redevelopment within the Critical Area be reduced by adopting measures to control stormwater runoff. The extent of the required management measures differ depending upon whether you are sited within a Resource Conservation Area, Limited Development Area, or Intensely Developed Area. Any water-

dependent expansions in the Resource Conservation Area and new development in Limited Development Areas must limit impervious area to 15 percent of the project site. Stormwater facilities must be designed to eliminate all runoff caused by the development in excess of that which would have come from the site if it were in its pre-development state. Water-dependent development within the Resource Conservation Area is further constrained as marinas and other commercial boat docking facilities proposing expansion in the Resource Conservation Area must demonstrate a net improvement in water quality for project approval (COMAR 27.01.03.06).

For Intensely Developed Areas, the criteria specify that management measures must reduce post-development pollutant loading to a level that is 10 percent below the load generated at the same site prior to development. This requirement is commonly referred to as the "10 Percent Rule." Contact your local Critical Area representative (see *Appendix II*) for guidance on complying with the 10 Percent Rule.

While the Critical Area Law is a State law, it is implemented at the local level. Counties and municipalities along the Chesapeake Bay and its tidal tributaries have developed local Critical Area Programs. The programs vary slightly from county to county so local programs and ordinances should always be consulted. Local water-dependent permit approval processes must be based upon consideration of how well the proposed project addresses the following eight areas of concern (COMAR 27.01.03.04).

- ◆ Activities will not significantly alter existing water circulation patterns or salinity regimes.
- ◆ The water body upon which the activities are proposed has adequate flushing characteristics in the basin area.
- ◆ The disturbance to wetlands, submerged aquatic plant beds, or other areas of important aquatic habitats will be avoided and/or minimized.
- ◆ The adverse impacts to water quality that may accrue as a result of these activities, such as non-point source runoff, sewage discharge from land activities or vessels, or from boat cleaning and maintenance operations, is minimized.
- ◆ Shellfish beds will not be disturbed or be made subject to discharge that will make them unsuitable for harvesting.
- ◆ Dredging will be conducted in a manner, and using a method, which causes the least disturbance to water quality and aquatic and terrestrial habitats in the area immediately surrounding the dredging operation or within the Critical Area.
- ◆ Dredged material will not be placed within the buffer or elsewhere in that portion of the Critical Area which has been designated as a Habitat Protection Area except as necessary for a) backfill for permitted shore erosion protection measures, b) use in approved vegetative shore erosion projects, c) placement on previously approved channel maintenance material disposal areas, and d) beach nourishment.
- ◆ Interference with the natural transport of sand will be minimized.

All projects proposed for the Critical Area must be reviewed by local Critical Area programs. Proposals for extensive projects may also be reviewed by the State Critical Area Commission. Proposals are evaluated to determine how the project will impact the following resources.

- ◆ Submerged aquatic vegetation (SAV)
- ◆ Tidal and nontidal wetlands
- ◆ Shellfish beds
- ◆ Rare, threatened, or endangered species
- ◆ Spawning, nursery, or propagation areas for anadromous fish
- ◆ Shallow water habitat
- ◆ Colonial waterfowl nesting sites
- ◆ Existing riparian forests
- ◆ Forests with interior dwelling bird species
- ◆ Natural heritage areas
- ◆ Tributary streams
- ◆ Waterfowl staging areas

The following mapping and narrative information must be provided with all proposals.

Mapping Information: Vicinity Sketch; Floodplain; Wetlands; Bathymetry; Soil Types; Steep Slopes; Upland Natural Areas, Areas of Critical State Concern, Chesapeake Bay Critical Area Boundaries and Habitat Protection Areas; Spawning Areas, Nursery Areas, Submerged Aquatic Vegetation and Shellfish Beds; Buffers; and Areas of Clearing, Limits of Disturbance, and Construction Areas.

Narrative Information: Rare and Endangered Species; Vegetative Description; Animals; Stormwater Management; Pollutants; Shoreline Protection Measures; Mitigation; Calculations; and Flushing and Water Quality Provisions (except for “minor” expansions).

Environmental Permits and Licenses

General Permit for Discharges from Marinas (No. 01MA)

Who must obtain a permit?

In 1990, EPA implemented regulations requiring permits for stormwater discharges from certain activities. The stormwater permit program requires that certain marinas classified by the Office of Management and Budget with Standard Industrial Classification (SIC) system number 4493 be covered by a National Pollution Discharge Elimination System (NPDES) permit. Any marina or boat yard that conducts boat maintenance activities, including

pressure washing, or that has wastewater discharges must apply for coverage under a permit. In Maryland, this permit is known as the General Permit for Discharges from Marinas. This permit authorizes the discharge of boat and equipment washing water, stormwater runoff from boat maintenance areas, treated bilge water, noncontact cooling water, and condensate discharges. In order to comply with the permit, marina operators must develop a stormwater pollution prevention plan and implement best management practices to ensure that wastewater and stormwater leaving the marina property will not harm the quality of the surrounding waters.

How does one apply for the permit?

To obtain coverage, an applicant must submit a notice of intent (NOI) form to the Maryland Department of the Environment (MDE) along with the required application fee. The fee varies from \$100 to \$500 depending upon the number of slips. Notice of intent forms are available from the Industrial Discharge Permits Division of MDE.

Upon notification of acceptance of the NOI by the Maryland Department of the Environment, the marina is authorized to discharge in accordance with the special conditions listed below. The plan must be available for review by MDE.

Wash Water

- ◆ Remove suspended solids from wash water using such methods as straw dam filters, geotextiles, settling basins, or sand filters.
- ◆ Wash water may not be discharged to State waters if detergents or other chemical cleaning agents are used.
- ◆ Discharge of wastewater from the cleaning of engines or other oily parts is prohibited.

Treated Bilge Water

- ◆ All discharges of treated bilge water to surface waters or discharged for reuse in the power wash system shall be monitored monthly at each point of discharge. A professional lab must do the analysis.
- ◆ Total residual oil and grease may not exceed 15 part per million (ppm).

Cooling Water

- ◆ All discharges of noncontact cooling water to surface waters shall be monitored monthly at each point of discharge. Marina staff may do the analysis themselves provided an appropriate meter is used. Standard swimming pool test kits are not acceptable.
- ◆ Total residual chlorine may not exceed 13 parts per billion (ppb).

Condensate

- ◆ Discharge of condensate that comes into contact with petroleum products or causes erosion is prohibited.



Accidental Discharge of Oil or Hazardous Substances

- ◆ In the event of an oil spill, the discharger must notify MDE at (410) 974-3551 and the National Response Center at (800) 424-8802 or (202) 426-2675 in the Washington, DC metropolitan area.
- ◆ Within 10 days of becoming aware of a release, the permittee must submit a written description of the release to MDE.
- ◆ The stormwater pollution prevention plan required as a condition of the general permit must be modified within 14 day to include a description of the release and to identify measures to prevent and respond to a recurrence.
- ◆ Facilities which have more than one anticipated discharge per year of the same hazardous substance or oil which is caused by events occurring within the scope of the relevant operating system shall, likewise, report the release to MDE and identify measures to prevent or minimize such releases.

Stormwater

- ◆ The permittee must develop and implement a Stormwater Pollution Prevention Plan. The plan must identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges associated with industrial activity at the facility. Additionally, the plan shall describe and insure the implementation of practices to reduce pollutants in stormwater discharges from the facility. Refer to *Box 5* for a general outline and *Appendix XII* for a template of a Stormwater Pollution Prevention Plan.
- ✧ For additional guidance in developing a Stormwater Pollution Prevention Plan, refer to: *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* and an EPA-published summary document on the same subject. Both are available for a fee from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161, telephone (800) 553-6847.
- ◆ For existing marinas and boatyards, the plan must be completed within one year of obtaining coverage under this permit. The facility must be in compliance with the terms of the plan within 18 months of receiving coverage.
- ◆ For new facilities, the plan must be completed and implemented prior to submitting a Notice of Intent for coverage under the general permit.
- ◆ Upon request, the plan must be submitted to MDE. The permittee may then be notified that the plan does not meet one or more of the minimum requirements. In such an event, the permittee must amend the plan and submit a written certification to MDE that the requested changes have been made.
- ◆ The permittee shall amend the plan whenever there is a change in design or operation that will have a significant effect on the potential for pollutants to be discharged to State waters. The plan shall also be amended if it proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with industrial activity.

Box 5. Contents of a Stormwater Pollution Prevention Plan

1. Pollution prevention team
 2. Description of potential pollutant sources
 3. Site map indicating drainage, maintenance, and storage areas
 4. Inventory of materials exposed to precipitation
 5. List of significant spills and leaks that occurred in the 3 most recent years
 6. Sampling data describing pollutants in stormwater discharges from the facility
 7. Summary of potential pollutant sources and identification of associated risks
 8. Description of stormwater management controls
 - A. Good housekeeping
 - B. Preventative maintenance
 - C. Spill prevention and response procedures
 - D. Inspections
 9. Employee training
 10. Record keeping and internal reporting procedures
 11. Non-stormwater discharges
 12. Sediment and erosion control
 13. Comprehensive site compliance evaluation
 14. Consistency with other plans
 15. Special requirements for stormwater discharges associated with industrial activity to municipal separate storm sewer serving a population of 100,000 or more
 16. Salt storage facilities located on fresh water
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Table 3. Summary of Environmental Permits and Licenses

The following table was adapted from *Business Guide to Environmental Permits and Approvals* (MDE 1998). For assistance determining which State requirements apply to you, contact MDE's Environmental Permits Service Center. Contact your local Office of Economic Development (see *Appendix VII*) for assistance with local permitting and regulatory requirements. Or, you may consult the online Business License Information System (BLIS) at www.blis.state.md.us. It is a system to help people identify which licenses and permits are needed to operate a business in Maryland.

Information Sources

Appendix I

Maryland
Department of the
Environment

- Environmental Permits Service Center
- Industrial Discharge Permits

Maryland
Department of
Natural Resources

- Waterway and Greenways Division

National Technical
Information Service

Appendix XII

Stormwater Pollution
Prevention Plan

Air Quality General Permit to Construct and Operate Small Stationary Gasoline Storage Tanks

- ◆ Operators of gasoline tanks in the 2,000-20,000 gallon range need to apply for an Air Quality General Permit to Construct Small Stationary Gasoline Storage Tanks. This requirement applies to both underground and aboveground gasoline storage tanks. All facilities covered by the permit must have Stage I Vapor Recovery. That is, there must be a mechanism to collect vapors that are released as fuel is transferred from a delivery truck to the storage tank.

Certain facilities are also required to have Stage II Vapor Recovery: a mechanism to collect vapors that are lost during refueling of motor vehicles (e.g., any vehicle that is required to be registered with the Motor Vehicle Administration). The Stage II requirements apply to facilities in Baltimore City and Anne Arundel, Baltimore, Calvert, Carroll, Cecil, Charles, Frederick, Harford, Howard, Montgomery, and Prince George's counties that dispense more than 10,000 gallons of gasoline per month. Facilities in these counties that dispense less than 10,000 gallons per month do not need to have Stage II Recovery devices or fulfill the other permit requirements related to testing, inspections, training, and signage. They do, however, have to maintain records of gasoline throughput and tank sizes. The records must be made available to MDE upon request.

To obtain coverage under the Air Quality General Permit, submit a "request for coverage" form to MDE along with the onetime fee of \$200. The form, a fact sheet and a copy of the permit are available at www.mde.state.md.us/arma/Programs/Aqpermit/aqpermit.html. For additional information, contact MDE's Air and Radiation Administration at 410-537-3230.

Oil Operations Permit

- ◆ Marina operators are required to obtain an Oil Operations Permit from the Maryland Department of the Environment (MDE) if they have the capacity to store an aggregate of 10,000 gallons or more of petroleum in aboveground storage tanks. Prior to February 2002, marinas were exempt from this permit if they had less than 50,000 gallons of storage capacity. Applicants for the Oil Operations Permit (required by COMAR 26.10.01.07) must submit three forms to MDE:
 1. **Oil Operations Permit Application General Form:** a one-page document for general information such as facility name and address.
 2. **Oil Operations Permit Application Form A:** A four-page document for recording more detailed information such as the type of operation (e.g., oil storage) and descriptions of tanks.
 3. **Plan for Notification, Containment and Clean-up of Oil Spills:** This three-page form helps marina operators to document what actions would be taken in the event of a spill and what types of response materials are available on site. This form could be incorporated into

a Spill Prevention Control and Countermeasure Plan (SPCC) by reference if the facility also needs an SPCC plan. (The SPCC program is implemented and enforced by the federal U.S. EPA rather than at the State level by MDE.)

For copies of the forms and additional information, contact MDE's Oil Control Program at 410-537-3386 or visit MDE's website at www.mde.state.md.us/was/oilcont/index.html. There is no fee for this permit although operating without a permit is a violation subject to penalties and fines.

Table 3. Summary of Environmental Permits and Licenses, page 1 of 10

Activity	Permit/License	Authority	Purpose	Requirements	Contact
Construction in Chesapeake Bay Critical Area	Local Chesapeake Bay Critical Area Protection Program Approval	Local ordinances and Natural Resources Article §8-1801-1816	To minimize adverse impacts on water quality that result from pollutants that are discharged from structures or conveyances or that have runoff from surrounding lands; conserve fish, wildlife, and plant habitat; and establish land use policies for development in the Chesapeake Bay Critical Area which accommodate growth and also address the fact that, even if pollution is controlled, the number, movement, and activities of persons in that area can create adverse environmental impacts.	Must address Critical Area Criteria	See <i>Appendix II</i> for local Critical Area contacts Critical Area Commission 45 Calvert Street, 2nd Floor Annapolis, MD 21401 (410) 260-7516
General construction activities	Land use and zoning approvals	Local/county ordinances	To comply with local land use policies (e.g., building permits, use and occupancy permits, grading permits)	Vary	County Office of Economic Development (see <i>Appendix VII</i>)

Table 3. Summary of Environmental Permits and Licenses, page 2 of 10

Activity	Permit/License	Authority	Purpose	Requirements	Contact
Any construction activity in Maryland that disturbs 5,000 sq. ft. or more of land or results in 100 cubic yards or more of earth movement	Erosion and Sediment Control Approval Stormwater Management Approval	STATE: Environment Article, Title 4, Subtitle 1 for erosion and sediment control and Subtitle 2 for stormwater management. These statutes are further defined in COMAR 26.09.01 and 26.09.02.	To reduce stream channel erosion, pollution, siltation, and local flooding caused by land use changes	STATE/FEDERAL PROJECTS: Erosion/sediment control plans are reviewed and approved by MDE. They must meet the 1994 standards and specifications for soil erosion and sediment control, and adhere to the Erosion and Sediment Control Guidelines issued by MDE in 1990 and the 1987 Stormwater Management Guidelines for State and Federal projects. ALL OTHER PROJECTS: Plans for private sector projects are reviewed by local authorities; generally a soil conservation district or municipality.	County Office of Economic Development (see <i>Appendix V/I</i>) MDE Water Management Administration (410) 631-3543 MDE Nonpoint Source Control Program Ken Pensyl (410) 631-3563 MDE Inspection and Compliance Program Jack Bowen (410) 631-3532 Lois McNamara (410) 631-3556

Table 3. Summary of Environmental Permits and Licenses, page 3 of 10

Activity	Permit/License	Authority	Purpose	Requirements	Contact
Any construction activity that disturbs 5 or more acres	NPDES Stormwater Permit for Construction Activity	FEDERAL: Clean Water Act, Section 402 for stormwater discharge permits and 40 CFR 122.26 STATE: Environment Article, Title 9, Subtitle 3; COMAR 26.08.04	To maintain after development, as nearly as possible, the pre-development runoff conditions	In addition to the erosion and sediment control and stormwater management requirements cited above, <i>all</i> projects that disturb 5 or more acres must submit a Notice of Intent (an application form) to comply with MDE's stormwater general permit for construction activity (an NPDES permit).	MDE Inspection and Compliance Program Lois McNamara (410) 631-3556

Table 3. Summary of Environmental Permits and Licenses, page 4 of 10

Activity	Permit/License	Authority	Purpose	Requirements	Contact
Discharge of boat and equipment wash water, stormwater runoff from boat maintenance areas, noncontact cooling water, and condensate discharges	NPDES General Permit for Discharges from Marinas	FEDERAL: Clean Water Act, Section 402 for stormwater discharge permits and 40 CFR 122.26 STATE: Environment Article, Title 9, Subtitle 3; COMAR 26.08.04.09	To control pollution generated from runoff associated with industrial activity	Any marina or boat yard that conducts boat maintenance activities, including washing, and has wastewater or stormwater discharges must apply for coverage under the General Permit for Discharges from Marinas unless they have a valid individual discharge permit or coverage under 97-SW ¹ . In order to receive coverage under the permit, applicants must develop and implement a stormwater pollution prevention plan.	MDE Industrial Discharge Permit Division Patsy Allen or Edward S. Gertler (410) 631-3323

¹ 97-SW is the latest edition of the general discharge permit for stormwater associated with industrial activity. It expires November 30, 2002.

Table 3. Summary of Environmental Permits and Licenses, page 5 of 10

Activity	Permit/License	Authority	Purpose	Requirements	Contact
Any work that may change a tidal wetland	Tidal Wetland Licenses and Permits	STATE: Environment Article Title 16; COMAR 08.05.05	To protect wetlands because of their importance to humans and animals	Chesapeake Bay Critical Area Protection Program approval is required for most projects within 1,000 ft of a tidal waterway. All conditions of Tidal Wetlands Licenses or Permits must be met during the construction phase. Many projects also require local building permits.	MDE Wetlands and Waterways Program Richard J. Ayella (410) 631-8075
Any work that will change the course, current or cross-section of a nontidal stream or body of water. Also, any plan to fill in the 100-year floodplain or construct, reconstruct, repair, or maintain any development within the floodplain	Construction Permit for Activities within the 100-Year Floodplain (Nontidal Wetlands and Waterways Permits)	STATE: Environment Article Title 5, Subtitle 501 through 514; COMAR 08.05.03	To prevent, wherever possible, further degradation and losses of nontidal wetlands due to human activity; and wherever practicable and feasible, to offset unavoidable losses or degradations through the deliberate restoration or creation of nontidal wetlands	Engineering analysis is required for bridges, culverts, filling, and other construction. Also, environmental impacts, including impacts to nontidal wetlands, instream fisheries, wildlife, endangered species, and habitat associated with the proposed project and alternatives to reduce or eliminate adverse impacts are required.	MDE Wetlands and Waterways Division Terry Clark (410) 631-8094

Table 3. Summary of Environmental Permits and Licenses, page 6 of 10

Activity	Permit/License	Authority	Purpose	Requirements	Contact
Any of the following activities in a nontidal wetland or its buffer: grading or filling; excavating or dredging; changing existing drainage patterns; disturbing the water level or water table; and destroying or removing vegetation.	Proposed Activities in Nontidal Wetlands (Nontidal Wetlands and Waterways Permits)	FEDERAL: Section 10 of the Rivers and Harbors Act of 1899 ² ; Section 404 of the Clean Water Act ³ STATE: Environment Article Title 5, Subtitle 5-901, et seq., COMAR 08.05.04	To prevent, wherever possible, further degradation and losses of nontidal wetlands due to human activity; and wherever practicable and feasible, to offset unavoidable losses or degradations through the deliberate restoration or creation of nontidal wetlands	Wetland mitigation construction or monitoring requirements may be required in many instances and may extend well beyond construction of an approved mitigation project.	MDE Wetlands and Waterways Division Terry Clark (410) 631-8094
Discharge of sewage and grey water from a marina's private sewage treatment plant to groundwater	Groundwater Discharge Permit	Environment Article, Title 9, Subtitle 3; COMAR 26.08.01-4 and 26.08.07	To control the disposal of treated municipal or industrial waste water into the State's groundwater via spray irrigation or other land-treatment applications	Must be included in county water and sewer plans. MDE must make a preliminary site evaluation. A hydrogeological study of the proposed site may be required.	MDE Water and Wastewater Permits Program Dr. Ching-Tzone Tien (410) 631-3662

²Regulates all work and structures in navigable waters of the United States.

³US COE permits are issued or denied to regulate discharges of dredged or fill materials in navigable waters of the U.S., including wetlands.

Table 3. Summary of Environmental Permits and Licenses, page 7 of 10

Activity	Permit/License	Authority	Purpose	Requirements	Contact
Discharge of sewage and grey water from a marina's private sewage treatment plant to surface water	Surface Water Discharge Permit	FEDERAL: Federal Clean Water Act STATE: Environment Article, Title 9, Subtitle 3; COMAR 26.08.01-.04	To maintain water quality standards in the water receiving the discharge	Must be included in county water and sewer plan. Must meet all effluent limits, monitoring requirements, and other permit conditions.	MDE Water and Wastewater Permits Program Stephen Luckman (410) 631-3671
Storage of 1,000 gallons or more of used oil or 10,000 gallons or more of oil in an above-ground tanks or operation of an oil transfer facility	Oil Operations Permit	Environment Article §4-405; COMAR 26.10.01	Spill prevention and control	Spill prevention and response training; spill contingency plans; spill prevention and containment equipment; detection and control of spills	MDE Oil Control Program Horacio Tablada or Greg Sonberg (410) 631-3386
To load or unload oil within the State	Oil Transfer License	Environment Article §4-411; COMAR 26.10.01.06	Submit quarterly reports indicating volume and method of transfer into State and the fee paid	Report number of barrels transferred to MDE	MDE Oil Control Program Horacio Tablada or Cindy Keller (410) 631-3433

Table 3. Summary of Environmental Permits and Licenses, page 8 of 10

Activity	Permit/License	Authority	Purpose	Requirements	Contact
Anybody who installs, removes, upgrades, repairs, or retrofits an underground storage tank must be certified	Underground Storage Tank (UST) Installers Certification	Environment Article §4-405; COMAR 26.10.06	To protect groundwater from leaks caused by improperly installed or removed USTs	PRE-APPROVAL: Demonstrated knowledge of the principles of proper UST installation and State requirements. POST-APPROVAL: Continued proper installation. Certification must be renewed every 2 years. Also, check with county and local authorities before work begins	MDE Oil Control Program Horacio Tablada or Cindy Keller (410) 631-3433
To operate a charcoaler, pit barbecue, small fuel burning equipment, and/or a small stationary gasoline storage tank	General Air Quality Permit to Construct	Environment Article, Title 2, Subtitle 4; COMAR 26.11.02	To control emissions	Vary depending upon type of activity. May include control of visible emissions, inspection, training, and/or record keeping.	MDE Air Quality Permits Program John Scherer (410) 631-3289

Table 3. Summary of Environmental Permits and Licenses, page 9 of 10

Activity	Permit/License	Authority	Purpose	Requirements	Contact
To operate a paint spray booth	Air Quality Permit to Construct	FEDERAL: Federal Clean Air Act, Section 110 and Title V, 42 U.S.C. 7401 et seq. STATE: Environment Article Title 2, Subtitle 4; COMAR 26.11.02.01 through 26.11.02.21	To ensure that any new, modified, replaced, or relocated source of air pollution complies with all air quality requirements. Air quality standards have been adopted to protect public health, vegetation, and forests.	PRE-APPROVAL: Before an Air Pollution source is constructed or modified, a permit must be obtained from MDE, Air and Radiation Management Administration. POST-APPROVAL: Periodic emissions tests and/or reports may be required depending on the nature of the operation and its emissions.	MDE Air Quality Permits Program Nolan Penney (410) 631-3219
To apply antifoulant paints containing tributyl tin	TBT Applicators License	FEDERAL: Organotin Antifoulant Paint Control Act STATE: Agriculture Article §5-901; COMAR 15.05.01	Restrict use of TBT to vessels >25 m or that have aluminum hulls and to outboard and lower drive units	It is unlawful for anybody other than an owner or agent of a commercial boatyard to possess, distribute, sell, offer for sale, use, or offer for use any paint containing a TBT compound (except for spray can ≤16 oz)	Maryland Department of Agriculture Pesticide Regulation Section 50 Harry S. Truman Pkwy Annapolis, MD 21401 (410) 841-5710

Table 3. Summary of Environmental Permits and Licenses, page 10 of 10

Activity	Permit/License	Authority	Purpose	Requirements	Contact
If you will generate 100 kg of hazardous waste in a calendar month or accumulate this amount at any one time	Notification of Hazardous Waste; EPA Identification Number for Generators, Transporters, and Treatment/Storage/Disposal (TSD) Facilities	FEDERAL: RCRA - Section 3010; 40 CFR Part 262.12, 263.11, and 264.11 STATE: COMAR 26.13.03.03, 26.13.04.01B and 26.13.05.02B	To ensure proper storage and disposal of hazardous wastes	A generator may not treat, store, dispose of, transport, or offer for transportation, hazardous waste without having received an EPA Identification Number. A generator may not offer hazardous waste to transporters or to a TSD facility that has not received an EPA Identification Number.	MDE Hazardous Waste Program Harold L. Dye, Jr. or Emily Troyer (410) 631-3344

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Clean Boating Tip Sheet

Vessel Cleaning and Maintenance

As a boater, you are well aware of the care your vessel requires. In order to keep your boat safe, reliable, and attractive, you must clean and maintain it. As you do so, minimize environmental impacts by following the recommendations listed here.

Caution is necessary because your choice of products and activities can have serious impacts on water quality and aquatic life. For example, if paint chips from a hull are not contained, they may end up in the water. The heavy metals in the paint chips may then harm worms, oysters, and other bottom-dwelling creatures and, thus, disrupt the aquatic food chain.

Clean Carefully

- Wash frequently with a sponge or nonabrasive pad and plain water. This approach is very effective at removing salt. Additional "elbow-grease" is required to remove stains.
- When detergents are necessary, use soaps that are phosphate-free, biodegradable, and non-toxic. Any soap should be used sparingly because even non-toxic products can be harm-

ful to wildlife. For example, detergents will destroy the natural oils on fish gills, limiting their ability to breathe.

- Wax your boat, if appropriate. A good coat of wax prevents surface dirt from becoming ingrained.
- Clean teak with a mild soap and abrasive pads or bronze wool. This method is safe for the environment and better for the boat than the solvents in standard teak cleaners which tend to eat away at the wood and to damage seam compounds.
- Avoid detergents that contain ammonia, sodium hypochlorite, chlorinated solvents (bleach), petroleum distillates, and lye.
- Try some of the alternative cleaning products listed on the reverse side of this page.

Maintain Mindfully

- Collect all paint chips, dust, and residue. Dispose in regular trash.
- Share leftover paint and varnish.
- Use less toxic propylene glycol antifreeze.
- Avoid overkill. Select a bottom paint developed for the mid-Atlantic region.

Recycle Regularly

- Recycle used oil, oil filters, and antifreeze.
- Bring used solvents and waste gasoline to local hazardous waste collection days.
- Call 1-800-4-RECYCLE for locations of recycling centers and information about hazardous waste collection days.
- Visit the Maryland Department of the Environment's web page at www.mde.state.md.us/was/recycle/index.html for local recycling and hazardous waste contacts.



Be a Conscientious Consumer

- Read product labels. Labels convey information about the degree of hazard associated with a particular product. For example, DANGER equates to extremely flammable, corrosive or toxic; WARNING indicates that the material is moderately hazardous; and CAUTION signals a less hazardous product. Select products that contain no warnings or which merely CAUTION consumers.
- Be wary of unqualified general claims of environmental benefit, *e.g.*, "ozone friendly." A better, more meaningful label would read, "This product is 95 percent less damaging to the ozone layer than past formulations that contained chlorofluorocarbons (CFCs)."
- For additional information about environmentally responsible products, contact Green Seal. Green Seal is an independent, nonprofit organization that sets environmental standards for consumer goods. Products that meet their criteria are awarded a "Green Seal of Approval." You may search Green Seal's database of Green Seal-certified, environmentally responsible products at www.greenseal.org or call (202) 872-6400.

Alternatives to Toxic Products

While baking soda, vinegar, lemon juice, and vegetable oils are far less harmful than bleaches, scouring powders or detergents, they are still toxic to marine life. Use cleaning products sparingly and minimize the amount discharged into the water. Never dispose of any cleaning products down the thru-hull drain; dispose of them on shore.

<i>Product</i>	<i>Alternative</i>
Bleach	Borax
Detergent & Soap	Elbow grease
Scouring Powders	Baking soda. Or rub area with one-half lemon dipped in borax, then rinse
General Cleaner	Baking soda and vinegar. Or lemon juice combined with borax paste
Floor Cleaner	One cup vinegar + 2 gallons of water
Window Cleaner	One cup vinegar + 1 qt. warm water. Rinse and squeegee
Aluminum Cleaner	2 Tbsp. cream of tartar + 1 qt. of hot water
Brass Cleaner	Worcestershire sauce. Or paste made of equal amounts of salt, vinegar, and water
Copper Cleaner	Lemon juice and water. Or paste of lemon juice, salt, and flour
Chrome Cleaner/Polish	Apple cider vinegar to clean; baby oil to polish
Stainless Steel Cleaner	Baking soda or mineral oil for polishing, vinegar to remove spots
Fiberglass Stain Remover	Baking soda paste
Mildew Remover	Paste with equal amounts of lemon juice and salt, or white vinegar and salt
Drain Opener	Dissemble or use plumber's snake. Or flush with boiling water + one-quarter cup baking soda + one-quarter cup vinegar
Wood Polish	Olive or almond oil (interior walls only)
Hand Cleaner	Baby oil or margarine
Head & Shower	Baking soda; brush thoroughly
Rug/Upholstery Cleaner	Dry corn starch sprinkled on; vacuum

Adapted from Buller, Pat. 1995. *Clean Marina+Clean Boating+Clean Water Partnership*. Seattle, WA: Puget Soundkeeper Alliance.



For information about the Maryland Clean Marina Initiative, contact the Maryland Department of Natural Resources at (410) 260-8770 or visit www.dnr.state.md.us/boating.

Clean Boating Tip Sheet

Selecting a Bottom Paint

The Issue

Marine growth, such as barnacles and slime, impair vessel performance. To maintain top performance, therefore, boats are often painted with toxic paint to prevent fouling growth. Unfortunately, the biocides found in the paints are harmful to many marine critters—not just those that try to make their homes on the undersides of boats.

Selecting a bottom paint is not an easy job. The challenge is to select the least toxic paint that will effectively prevent fouling. The effectiveness of a particular paint will be impacted by water temperature and salinity and by how frequently and how quickly the vessel is operated.

The Paints

Bottom paints can be separated into three general categories: antifouling hard, antifouling ablative, and non-toxic coatings.

The two most commonly used varieties of coatings are hard and ablative paints:

- When hard or “contact leaching” paints dry they create a porous film on the hull. Biocides are held in the pores. The toxins dissolve when they contact water.
- Ablative or “sloughing” paints are partially soluble. The active ingredient is continually leached out. The underlying film then weakens and is polished off as the boat moves through the water. Fresh antifouling paint is, thus, exposed.

Hard paints contain varying levels of biocides which are released slowly. Ablative paints generally contain lower levels of toxins yet they are released at a more steady rate. The impact to the aquatic environment overtime is about the same.

Non-toxic coatings are the most environmentally-friendly option. They contain Teflon or silicone and produce hard, slick surfaces to which fouling growth cannot firmly attach. Paint companies are moving toward the broad introduction of non-toxic slick paints. At this time, however, they are not widely available.

Which bottom paint is right for you?

There is no easy answer to this question (at least until biocide-free coatings are readily available and affordable). Weigh the pros and cons described in the following table and consider the type of boat you have and where and how you use it. Ask yourself the following questions:

- **How frequently do I use my boat?** Ablative paint is most effective when a boat is used regularly.
- **How quickly do I typically travel?** Speed boats are generally painted with hard paints.
- **Will I want the hull scrubbed while the boat is in the water?** If you anticipate underwater hull cleaning, DO NOT USE ablative paint.
- **Will I have the boat hauled annually?** Hard paint is applied annually. Some ablative paints are designed to last for more than one season.
- **What type of coating is presently on the hull?** Select a new coating that is compatible.

Comparison of Maintenance Requirements

Maintenance Need	Ablative Paint	Hard Paint	Environmental Issue
Frequency of repainting	Every 1 to 3 years depending on the thickness of the original application and use of boat.	A single coat is applied annually.	AIR QUALITY. Fumes (volatile organic compounds) that are harmful to human health and air quality are released whenever solvent-based paints are used. Use water-based paints whenever practical.
Hull preparation	Light sanding is generally all that is needed prior to application of new paint.	Annual heavy sanding is suggested to improve adhesion & prevent build up. If you chose light sanding instead, the resulting build up will need to be blasted or stripped off periodically.	DEBRIS. Use the following techniques to keep debris out of the water: <ul style="list-style-type: none"> • Collect dust created by sanding with a vacuum sander or in tarps. • Blast or strip in an enclosed area where debris can be easily captured. • Send collected debris with your regular trash to a municipal landfill or incinerator. • Encourage your marina or boatyard to follow these pollution prevention practices.
Pressure washing	Pressure washing will remove some ablative paint.	Pressure washing will remove fouling growth and possibly paint chips. Very little pigment should	RELEASE OF BIOCIDES. Boatyards are required by law to remove visible solids from pressure wash water before it is returned to local waterways. <ul style="list-style-type: none"> • Solids from hulls painted with hard paints are easily collected in filter cloth, settling basins or even hay bales. • Inform your yard manager if you have ablative paint. He or she should use minimal water pressure so that, to the greatest extent possible, just slime is removed. You will be protecting the environment and your investment in the paint.
Underwater hull cleaning	Ablative paint should never be cleaned in the water.	Hard paints may be cleaned by divers if done carefully.	RELEASE OF BIOCIDES. Be aware that colored plumes should not be visible in the water when a hull is being cleaned. They indicate that paint is being removed. <ul style="list-style-type: none"> • Hard or slick paints may be cleaned while a vessel is in the water as long as care is taken to use the least abrasive material practical (see the Clean Boating Tip Sheet <i>Underwater Hull Cleaning</i>). • Ablative paints should not be cleaned in the water as the scrubbing action will release paint and its associated biocide.

For information about the Maryland Clean Marina Initiative contact the Maryland Department of Natural Resources at (410) 260-8770 or visit www.dnr.state.md.us.



Clean Boating Tip Sheet

Underwater Hull Cleaning: Tips for divers, marina operators, and boaters

In order to maintain maximum performance and to stretch the time between haul-outs, some boaters hire professional divers (or dive themselves) to clean their hulls while their boats are in the water. If done properly, underwater hull cleaning removes marine growth and a minimal amount of antifouling paint. When done too vigorously or when ablative paint is scrubbed, however, unacceptable levels of toxic bottom paint are released into the surrounding water.

The following tips for divers, boatyard and marina operators, and boaters are intended to guide decisions about hull treatment and maintenance. By working together, we can minimize the pollution problems associated with underwater hull cleaning.



Best Management Practices for Divers

- Clean gently to avoid creating a plume or cloud of paint in the water.
- On boats painted with ablative paints, clean only running gear and zinc anodes.
- Refrain from hull cleaning for a minimum of 60 days after hard antifouling paint has been applied.
- Always use the least abrasive material that will effectively clean the painted surfaces:
 - Use soft sponges or pieces of carpet to clean marine growth.
 - Use soft nylon or similar material on rotary brush machines.
 - Use more rigorous cleaning pads only as needed to remove hard growth.
 - Use stainless steel pads or brushes only on unpainted metal areas.
- Do not clean the entire hull if it is not dirty. Just do the waterline, running gear, and propeller.
- Never sand, strip or chip hull paint underwater.
- If you have been hired to replace zinc anodes, bring the old ones ashore for recycling. Look in the phone book under "scrap" for dealers.
- Provide customers with a copy of your standard pollution prevention procedures.

Best Management Practices for Boatyard and Marina Operators

- Provide an alternative to underwater hull cleaning by offering mid-season pressure wash specials.
- Allow only divers that follow the Best Management Practices outlined above to clean hulls within the confines of your marina. Ask all subcontractors to sign in. Also, ask to see a current business license and proof of liability insurance.
- Keep a referral list of reputable divers to pass along to boaters seeking underwater hull services.
- Encourage boaters that typically hire divers to use hard bottom paints.
- After painting a boat's hull, provide the boat owner with a simple description of the paint used and the maintenance requirements. For example, "Your boat was painted on April 27, 2000 with Barnacle B-gone. Barnacle B-gone is an ablative paint. It should not be scrubbed while in the water. The active ingredient is cuprous oxide which is a potent biocide. A copy of the Material Safety Data Sheet is attached for your information. Barnacle B-gone retains its antifouling effectiveness when hauled and can be relaunched without repainting. Depending on frequency of use and other factors, the hull will need to be repainted in approximately 2 years."
- Ask customers who have had their hulls coated with ablative paints to read and sign a notice that states, "I understand that my boat has been painted with an ablative paint. If the hull is scrubbed while in the water, unacceptable concentrations of paint and the pesticide cuprous oxide will be released."
- Earn cash by collecting and recycling used zinc anodes. Look in the phone book under "scrap" for dealers.

Best Management Practices for Boaters

- Take advantage of "quick haulout specials" if offered by your marina.
- Where practical, store your boat out of the water.
- Be aware that colored plumes should NOT be visible in the water near underwater cleaning activity. They indicate that paint, rather than just marine growth, is being rubbed off of your boat.
- Let divers know you expect them to minimize pollution while working on your boat. Ask them to follow the best management practices for divers listed above.
- Never hire a diver to clean a hull painted with ablative (*i.e.*, sloughing) paint.
- Be knowledgeable about your antifouling paint. Ask your yard manager to provide a written statement describing the name and type of paint used, health and safety warnings, maintenance requirements, and date applied. Keep a record of this same information if you paint your own hull.
- If you know you will want a diver to clean your hull, select a hard or slick paint.
- Wait a minimum of 60 days after applying fresh, hard bottom paint to have the hull cleaned underwater.
- Consider low copper hard paints or non-toxic slick paints and regular underwater hull cleaning instead of high copper content paints.
- Before hiring a diver, get three local references from a marina operator or other boaters who know the diver's work.

For information about the Maryland Clean Marina Initiative contact the Maryland Department of Natural Resources at (410) 260-8770 or visit www.dnr.state.md.us.



Clean Boating Tip Sheet

Vessel Sewage

Is Sewage a Problem?

Raw or poorly treated boat sewage is harmful to human health and water quality. Typhoid, hepatitis, cholera, gastroenteritis, and other waterborne diseases may be passed directly to people who swim in contaminated waters. People may also become infected by eating shellfish contaminated with viruses and other microorganisms contained in sewage discharge.

Sewage is also harmful to water quality. Because the microorganisms within sewage need oxygen, any effluent discharged to waterways reduces the amount of oxygen available to fish and other forms of aquatic life. Furthermore, the heavy

nutrient load in sewage promotes excessive algal growth. As the algae multiply, they prevent life-giving sunlight from reaching subsurface vegetation. When the algae die they create another problem: the algae are decomposed by bacteria which further reduce levels of dissolved oxygen.

What Does the Law Say?

According to Federal and State law, it is illegal to discharge raw sewage.

All vessels with installed toilets must have a Marine Sanitation Device (MSD):

- Type I systems mechanically cut solids and disinfect waste. They must bear a U.S. Coast Guard certification label.
- Type II systems are similar to Type I systems. The difference is that Type IIs treat sewage to a higher standard and generally

require more space and energy. Type II systems must also have a Coast Guard certification label.

- Type III systems do not discharge sewage. Holding tanks are the most common Type III system. Incinerating systems are another option. A Coast Guard label is not required.

Vessels 65 feet and under may have any of these three types of MSDs. Vessels over 65 feet must have a Type II or III system.

Within a No Discharge Zone (NDZ), the discharge of all sewage is prohibited. Herring Bay and the northern Coastal Bays are NDZs. Boaters with Type I and II systems must secure them while navigating within an NDZ. Locking the door to the head or disabling the seacock are acceptable methods for preventing overboard discharges.



What Can You Do?

Holding Tanks

Install a holding tank. Information explaining how to retrofit a boat to include a holding tank is available on the Department of Natural Resources' web site at www.dnr.state.md.us/boating/pumpout/systemsguide.

Use good plumbing to control holding tank odor. Fiberglass and metal tanks are highly resistant to permeation. Specially labeled flexible "sanitation hoses" and PVC piping are also highly impermeable. Hose runs should be as short and as straight as possible. Wherever practical, use rigid pipe below the level of the holding tank and in other areas where sewage will

accumulate. Keep the number of connections to a minimum and insure that seals are tight.

Use enzyme-based products in your holding tank to further control odor. Enzymatic products use biological processes, rather than harsh chemicals, to break down sewage. Be sure to pump and rinse your holding tank prior to initial use of an enzyme product if you have used chemical-based odor control additives in the past. Chemical residues may interfere with the effectiveness of enzyme-based products.

Avoid holding tank products that contain quaternary ammonium compounds (QACs) and formaldehyde. These products may disrupt sewage treatment plants.

Type I and II MSDs

Maintain your Type I or II MSD. Establish a regular maintenance schedule based on your owner's manual to remind yourself when chemicals need to be added, electrodes need to be cleaned, etc.

Do not discharge your Type I or II MSD while in a marina, in a swimming area, in a No Discharge Zone, over an oyster bar, or in a poorly flushed area. Effluent from legal Type I and Type II systems contains nutrients and possibly toxic chemicals. It may contain pathogens as well.

Use shoreside restrooms when in port.



For information about the Maryland Clean Marina Initiative, contact the Maryland Department of Natural Resources at (410) 260-8770 or visit www.dnr.state.md.us/boating.

Appendix I. Information Sources

Alliance for the Chesapeake Bay

6600 York Road, Suite 100

Baltimore, MD 21212

(410) 377-6270

Web: www.alliancechesbay.org

- BayScapes information

American Boat and Yacht Council

3069 Solomons Island Road

Edgewater, MD 21037

(410) 956-1050

- Information about holding tank retrofits and vessel standards

BoatU.S. Foundation

147 Old Solomons Island Road, Suite 513

Annapolis, MD 21401

(410) 897-1060

(410) 897-0396 (fax)

- Clean boating educational materials

Chesapeake Bay Environmental Hotline

U.S. Attorney General's Office

800-377-5879

- Report environmental concerns and complaints

Chesapeake Bay Foundation

6 Herndon Street

Annapolis, MD 21403

(410) 268-8816 (Annapolis office)

(410) 269-0481 (Baltimore office)

(301) 261-2350 (Washington, DC office)

(800) 445-5572

- Oyster Restoration Program
- Copies of *Your Boat and the Bay*
- Storm drain stenciling information and supplies

Chesapeake Bay Program Office

410 Severn Avenue, Suite 109

Annapolis, MD 21403

(410) 267-5700

(800) YOUR BAY

- Annual workshops on up-to-date design methods and selection criteria for stormwater management structures (Russ Mader)

Cooperative Extension Service

University of Maryland

Home and Garden Information Center

12005 Homewood Road

Ellicott City, MD 21042

(800) 342-2507

Web: www.agnr.umd.edu/hgic/

- Soil test kits
- Information and advice about environmentally responsible landscaping, composting, and Integrated Pest Management

Critical Area Commission

1804 West Street, Suite 100

Annapolis, MD 21401

(410) 260-3460

- Critical Area criteria
- Compliance guidebooks
- Information about MD nurseries that sell native plants
- See *Appendix II* for a list of local contacts

Florida Sea Grant College Program

PO Box 110409

Gainesville, FL 32611-0409

(352) 392-2801

Web: www.flseagrant.org

- Order copies of the *Panic Preventer File for Marinas* (\$15). Item number SGEB-45.

Local Planning and Zoning Offices

- Ask to consult the Sensitive Species Project Review Areas (SSPRA) data layer of MERLIN, Maryland's Environmental Resources and Land Information Network. This data layer is meant to be used for preliminary screening.

Marine Trades Association of Maryland

P.O. Box 3148

Annapolis, MD 21403

(410) 269-0741

- Represent the interests of the recreational boating industry in Maryland

Maryland Department of Agriculture

Pesticide Regulation Section

50 Harry S. Truman Parkway

Annapolis, MD 21401

(410) 841-5710

- License for tributyl tin paints

Maryland Department of Natural Resources

580 Taylor Avenue

Annapolis, MD 21401

Web: www.dnr.state.md.us

Environmental Review, B-3

(410) 260-8330

- The Department's single point of contact for environmental review issues including shellfish beds, anadromous fish spawning waters, other important finfish, State endangered/threatened species, waterfowl nesting areas, and Natural Heritage Areas

Fisheries Service
(410) 260-8259

- Advice and suggestions for raising oysters (suitability of location, techniques, options, costs, legal issues, etc.)

Natural Resources Police
(410) 260-8888

- In case of emergency or to report violations

Natural Resources Police
(410) 260-8880

- Abandoned boats and general law enforcement questions

Natural Resources Police
(410) 260-8840

- Information about complying with MSD laws

Waterway and Greenways Division
(410) 260-8770

- Maryland Clean Marina Initiative
- Electronic copy of marina contract language
- Clean boating tip cards and other educational material
- Pumpout station grants
- Free copies of ABYC retrofit booklet
- Pumpout location brochures
- MSD requirement fact sheets

Maryland Department of the Environment

2500 Broening Highway
Baltimore, MD 21224

Web: www.mde.state.md.us

Air Quality Permits Program
(410) 631-3219

- Permit for a permanent paint spray booth

Emergency Planning and Community Right-to-Know
(410) 631-3800

- Information about EPCRA requirements, including Tier Two forms

Emergency Response Division
(410) 974-3551

- Oil or hazardous material spill response

Enforcement
(410) 631-3400

- Enforcement related questions and complaints

Environmental Permits Service Center
(410) 631-3772 or (800) 633-6101 ext. 3772

- Assistance with permit identification and application

Hazardous Waste Program
(410) 631-3345

- Information about hazardous waste regulations

Industrial Permits Division
(410) 631-3323

- General Permit for Discharges from Marinas

Oil Control Program
(410) 631-3386

- Permits for petroleum storage tanks
- Assistance with installation and plan review
- Register underground storage tanks

Recycling Office
(410) 631-3314

- Contact information for local recycling and household hazardous waste disposal coordinators
- Location of recycling facilities

Water Management Administration
(410) 631-8091

- Tidal wetlands permits
- Dredging information

Water Management Administration
(410) 631-3543

- Erosion and sediment control approval
- Stormwater management approval
- NPDES General Permit for Construction
- Copy of Maryland Stormwater Design Manual

Water Quality Infrastructure Program
(410) 631-3767

- Grant funds to counties and incorporated municipalities for stormwater management structures

Maryland Environmental Service

2011 Commerce Park Drive
Annapolis, MD 21401-2995

(410) 974-7282 or (800) 473-2925 (4-RECYCLE)

- Information about recycling used oil and antifreeze
- Locations of recycling centers

Maryland Environmental Trust

100 Community Place, First Floor
Crownsville, MD 21032

(410) 514-7900

Web: www.dnr.state.md.us/met

- Conservation Easement Program

Minnesota Sea Grant College Program

University of Minnesota
2305 East Fifth Street

Duluth, MN 55812-1445

(218) 726-6191

- Copy of *Composting Fish Waste* by Thomas Halbach and Dale Baker (\$8)

National Fire Protection Association

1 Batterymarch Park
PO Box 9101

Quincy, MA 02269-9101

(800) 344-3555

Web: www.nfpa.org

- Copies of NFPA standards
- Copies of NFPA standards may be available from your local fire marshal

National Technical Information Service

5285 Port Royal Road
Springfield, VA 22161
(800) 553-6847

- *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices*
- EPA-published summary document on the same subject

Ocean Conservancy

1725 DeSales Street, NW, Suite 600
Washington, DC 20036
(202) 429-5609 or
1432 North Great Neck Road, Suite 103
Virginia Beach, VA 23454
(757) 496-0920

Email: stormdrain@oceanconservancyva.org

Web: www.oceanconservancy.org

- Marine debris educational material
- Storm drain stenciling information and materials
- Information about the annual international coastal cleanup

Prince George's County

Department of Environmental Resources
Programs and Planning
9400 Peppercorn Place, 6th Floor
Largo, MD 20774

Attn: Larry Coffman or Derek Winogradoff
(301) 883-5834

- Low Impact Development Design Manual
- Bioretention handbook

State Fire Marshal's Office

300 East Joppa Road, Suite 1002
Towson, MD 21286
(800) 525-3124

- Call to schedule a "basic fire inspection"

The Nature Conservancy

4245 North Fairfax Drive, Suite 100
Arlington, VA 22203-1608
(800) 628-6860

Email: comments@tnc.org

Web: www.nature.org

- Private, non-profit land conservancy

United States Coast Guard

National Response Center (G-OPF)
2100 Second Street, SW, Room 2611
Washington, DC 20593-0001
(800) 424-8802
(202) 267-2165

Web: www.nrc.uscg.mil

- Oil spill response

United States Coast Guard

(800) 368-5647

- Copies of *Federal Requirements and Safety Tips for Recreational Boats*

United States Coast Guard, Activities Batimore

- (410) 576-2561 - Marine safety and environmental protection
- (410) 576-2682 - Public information hotline

U.S. Environmental Protection Agency

Region III
1650 Arch Street
Philadelphia, PA 19103-2029
(800) 438-2474

Web: www.epa.gov

- Information about Federal laws and regulations and EPA programs
- Visit the Oil Prevention Program's web page at www.epa.gov/oilspill for information about oil control laws and regulations

U.S. Fish and Wildlife Service

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
(410) 573-4500

Endangered/Threatened Species (Andy Moser)

- Federal endangered/threatened species
- Submit a USGS topographic quad with the proposed project site marked and a brief project description

BayScapes

(410) 573-4500

- BayScapes information including a list of beneficial plants

Appendix II. Local Critical Area Commission Contacts

Annapolis

Mr. Jon Arason
Department of Planning and Zoning
Municipal Building
160 Duke of Gloucester Street
Annapolis, MD 21401
(410) 263-7961
(410) 263-1129 (fax)
Web: www.ci.annapolis.md.us

Anne Arundel County

Ms. Ginger Ellis
Office of Planning and Zoning
2664 Riva Road
PO Box 6675
Annapolis, MD 21401
(410) 222-7441
(410) 222-7255 (fax)
Web: www.co.anne-arundel.md.us

Baltimore City

Ms. Susan Williams
City of Baltimore Planning Commission
Department of Planning, Current Planning Division
417 E. Fayette Street, 8th Floor
Baltimore, MD 21202-3416
(410) 396-5902 (Critical Area)
(410) 269-6785 (fax) (in Annapolis)
Email: susane.williams@baltimorecity.gov
Web: www.ci.baltimore.md.us/government/planning

Baltimore County

Ms. Pat Farr
Department of Environmental Protection and Resource
Management
County Courts Building
401 Bosley Avenue
Towson, MD 21204
(410) 887-3980
(410) 887-4804 (fax)
Web: www.co.ba.md.us

Betterton

The Honorable Carolyn C. Sorge
Mayor
PO Box 339
Betterton, MD 21610
(410) 348-5522
Web: betterton@dmv.com

Calvert County

Dr. David Brownlee
Calvert Co. Dept. of Planning and Zoning
150 Main Street, Room 304
Prince Frederick, MD 20678
(410) 535-1600, ext. 338
(410) 414-3092 (fax)
Web: www.co.cal.md.us

Cambridge

Ms. Tina Walter
Department of Public Works
705 Leonard Lane
Cambridge, MD 21613
(410) 228-1955
(410) 228-1474 (fax)
Web: www.cambridgemd.net

Caroline County

Ms. Elizabeth Krempasky
Planning and Codes
403 South 7th Street, Suite 210
Denton, MD 21629
(410) 479-8100
(410) 479-4187 (fax)

Cecil County

Mr. Eric Serinstrom
Cecil Co. Office of Planning and Zoning
129 E. Main Street, Room 300
Cecil County Courthouse
Elkton, MD 21921
(410) 996-5220
(410) 996-5305 (fax)
Web: www.ccgov.org

Centreville

The Honorable Terrence Adams
101 Lawyers Row
PO Box 100
Centreville, MD 21617
(410) 758-1224
(410) 758-0611 (fax)

Charles County

Mr. Kip Reynolds
Charles Co. Dept. of Planning and Growth Management
PO Box 2150
La Plata, MD 20646
(301) 645-0540
(301) 645-0638 (fax)
Web: www.charlescounty.org

Charlestown

Mr. Stanley W. Hearne
PO Box 154, 241 Market Street
Charlestown, MD 21914
(410) 287-6173
(410) 287-9163 (fax)

Chesapeake Beach

Ms. Michelle Jenkins
Box 400
Chesapeake Beach, MD 20732
(301) 855-8398
(301) 855-0043 (fax)
Web: www.chesapeake-beach.md.us

Chesapeake City

Ms. Patricia Garrett
PO Box 205
Chesapeake City, MD 21915
(410) 885-5298
(410) 885-2515 (fax)
Web: www.chesapeakecity.com

Chestertown

Mr. William S. Ingersoll
118 North Cross Street
Chestertown, MD 21620
(410) 778-0500
(410) 778-4378 (fax)
Email: office@chestertown.com
Web: www.chestertown.com

Church Hill

Ms. Marie L. Rameika
Town Hall
Main and Walnut Streets
PO Box 85
Church Hill, MD 21837
(410) 758-3740

Crisfield

Ms. Angie Evans
City Hall, Main Street
PO Box 270
Crisfield, MD 21817-0270
(410) 968-1333
(410) 968-2167 (fax)
Email: crisfield@ccisp.net

Denton

Ms. Jennifer Shull
Housing and Community Development
13 N Third Street
Denton, MD 21629
(410) 479-3625
(410) 479-3534 (fax)
Web: www.dentonmd.com

Dorchester County

Ms. Karen Houtman
Dorchester Co. Planning and Zoning Office
County Office Building
501 Court Lane, PO Box 107
Cambridge, MD 21613
(410) 228-3234
(410) 228-1563 (fax)

Easton

Mr. Lynn Thomas, Jr.
PO Box 520, 14 S. Harrison St.
Easton, MD 21601
(410) 822-2525
(410) 820-8016 (fax)
Web: www.town-eastonmd.com

Elkton

Ms. Jeanne Minner, Director of Planning
Office of Building and Inspections, Planning, and Zoning
PO Box 157
100 Railroad Avenue
Elkton, MD 21922-0157
(410) 398-4999
(410) 398-0128 (fax)
Web: www.townofelkton.org

Federalsburg

Ms. Shirley DeShields
PO Box 471, 118 Main Street
Federalsburg, MD 21632
(410) 754-8173
(410) 754-9269 (fax)
Web: www.federalsburg.org

Fruitland

Mr. Richard M. Pollitt, Jr.
PO Box F, 401 E. Main Street
Fruitland, MD 21826-0120
(410) 548-2800
(410) 548-4354 (fax)
Web: www.cityoffruitland.com

Greensboro

Ms. Diane Ewing
Commissioners of Greensboro
PO Box 340, 104 East Sunset Avenue
Greensboro, MD 21639
(410) 482-6222
(410) 482-7249 (fax)

Harford County

Ms. Pat Pudlakewicz
Harford County Dept. of Planning and Zoning
220 S. Main Street
Bel Air, MD 21014-3865
(410) 879-2000 ext. 103
(410) 879-8239 (fax)
Web: www.co.ha.md.us

Havre de Grace

Mr. Al Henry
Department of Planning
711 Pennington Avenue
Havre de Grace, MD 21078
(410) 939-1800
(410) 939-7632 (fax)
Web: www.havredegrace.com

Hillsboro

Mr. Roby Hurley
The Commissioners of Hillsboro
PO Box 128, 22043 Church Street
Hillsboro, MD 21641
(410) 822-3744

Indian Head

4195 Indian Head Highway
Indian Head, MD 20640
(301) 743-5511
(301) 743-9008 (fax)
Web: www.townofindianheadmd.org

Kent County

Kent Co. Planning Commission
400 High Street
Chestertown, MD 21620
(410) 778-7473
(410) 810-2932 (fax)
Web: www.kentcounty.com

Leonardtown

Lachelle Miller
206 Tudor Place
Tudor Hill, PO Box 1
Leonardtown, MD 20650
(301) 475-9791
(301) 475-5350 (fax)
Web: www.somd.com/leonardtown

Mardela Springs

Ms. Shirley M. Bailey
PO Box 81
Mardela Springs, MD 21837
(410) 742-7988

Millington

Mr. Stanley Hearne
Town Administrator
PO Box 330
Millington, MD 21651
(410) 928-3880
(410) 928-5764 (fax)

North Beach

Mr. Mark Frazer
8916 Chesapeake Avenue
PO Box 99
North Beach, MD 20714
(301) 855-6681
(301) 855-0113 (fax)
Web: www.ci.north-beach.md.us

North East

Ms. Melissa B. Cook-MacKenzie
PO Box 528, 106 South Main Street
North East, MD 21901-0528
(410) 287-5801
(410) 287-8267 (fax)
Web: www.northeastmd.org

Oxford

Ms. Lillian Lord
100 North Morris Street, P O Box 339
Oxford, MD 21654
(410) 226-5122
(410) 226-5597 (fax)

Perryville

Mr. Eric Morsicato
PO Box 773
Perryville, MD 21903-0513
(410) 642-6066
(410) 642-6391 (fax)
Web: www.perryvillemd.org

Port Deposit

Mr. Wayne L. Tome Sr.
64 South Main Street
Port Deposit, MD 21904
(410) 378-2122
(410) 378-9104 (fax)

Prince George's County

Chris Akinbobola
Rick Thompson
Dept. of Environmental Resources
9400 Peppercorn Place
Largo, MD 20774
(301) 883-5822
(301) 883-5919 (permitting)

Princess Anne

Mr. John O'Mearg
11786 Beckford Avenue
Princess Anne, MD 21853
(410) 651-1818
(410) 651-4226 (fax)
Web: www.townofprincessanne.com

Queen Anne's County

Mr. Steven Kaii-Ziegler
Office of Planning and Zoning
The Liberty Building
107 N. Liberty Street
Centreville, MD 21617
(410) 758-1255
(410) 758-2905 (fax)
Email: qacpnz@qac.org

Queenstown

Ms. Amy Moore
PO Box 4
Queenstown, MD 21658
(410) 827-7646
(410) 827-7661 (fax)

Rock Hall

Mr. Ron Fithian
Town Manager
PO Box 367
Rock Hall, MD 21661
(410) 639-7611
(410) 639-7298 (fax)
Web: www.rockhallmd.com

St. Mary's County

Ms. Sue Veith
Department of Planning and Permits
PO Box 653
Leonardtown, MD 20650
(301) 475-4670
(301) 475-4635 (fax)
Web: www.co.saint-marys.md.us

St. Michaels

Ms. Jean Weisman
PO Box 206
St. Michaels, MD 21663-0206
(410) 745-9535
(410) 745-3463 (fax)

Secretary

The Honorable David Kemp
PO Box 248
Secretary, MD 21664
(410) 943-3113
(410) 943-3926 (fax)
Email: 4secretary@bcctv.com

Sharptown

Mr. Doug Goshell
PO Box 338
Sharptown, MD 21861
(410) 883-3767
(410) 883-3772 (fax)

Snow Hill

Ms. Kelly Brewington
Town Manager
Municipal Bldg., PO Box 348
Snow Hill, MD 21863
(410) 632-2080
(410) 632-2858 (fax)

Somerset County

Ms. Joan Kean
Dept. of Technical and Community Services
11916 Somerset Avenue, Room 211
Princess Anne, MD 21853
(410) 651-1424
(410) 651-2597 (fax)

Talbot County

Mr. Daniel Cowee
Office of Planning and Zoning
Courthouse
11 North Washington Street
Easton, MD 21601-3178
(410) 770-8030
(410) 770-8043 (fax)

Vienna

Ms. Jeanette Hughes
PO Box 86
Vienna, MD 21837
(410) 376-3442 (Mon. 6:30-9:00 pm only)
(410) 376-3892 (fax)

Wicomico County/Salisbury

PO Box 870
Salisbury, MD 21803
(410) 548-4860
(410) 548-4955 (fax)
Web: www.wicomicocounty.org

Worcester County

Mr. Rudy Espinoza
Worcester Co. Planning, Permits, and Inspections
Room 116, Courthouse
Snow Hill, MD 21863
(410) 632-1200
(410) 632-3008 (fax)

Appendix III. BayScapes Program

BayScapes is a program developed by the U.S. Fish and Wildlife Service and the Alliance for the Chesapeake Bay to promote action to reduce nutrient inputs and other threats to water quality, and encourage the development of environmentally sound landscapes that benefit people, wildlife, and the Chesapeake Bay. The program teaches homeowners and others how to practice conservation landscaping, create wildlife habitat, use native plants, conserve water, create diversity, use integrated pest management, and plan for the long term. The BayScapes Program also emphasizes and facilitates strong participation from larger scale land managers, including Federal, State, and local government facilities, corporate landowners, and communities.

For more information, contact the BayScapes Program at (410) 573-4500.

How to Calculate the Time Needed to Properly Water Your Lawn

From: United States Fish and Wildlife Service. "BayScaping to Conserve Water," *A Homeowner's Guide*. Annapolis, MD: U.S. Fish & Wildlife Service Chesapeake Bay Field Office and Alliance for the Chesapeake Bay.

To determine how long you should run your water sprinkler to apply 1 inch of water to your lawn, use the following method:

Place your sprinkler in the desired location and set up five equally sized cans or cartons at intervals away from the sprinkler. Place cans no farther than 5 feet apart.

Run your sprinkler for one hour.

After the elapsed time, collect the cans and pour the water into a single can.

Measure the depth of the water you have collected during the 60 minutes and divide the amount of collected water in inches by the number of cans (five) to determine the application rate on an inch(es)-per-hour basis.

Example: If a sprinkler runs for 60 minutes and the total water collected from the five cans is 7.5 inches, the application rate will be 1.5 inches per hour (7.5 inches per 60 minutes divided by five cans equals 1.5 inches per hour). Therefore, to apply 1 inch of water, divide watering time by average depth to arrive at the number of minutes needed to apply 1 inch of water (60 minutes divided by 1.5 inches per hour equals 40 minutes needed to apply 1 inch).



Native Wildflowers and Grasses of the Northeastern U.S.

The following information was compiled by the U.S. Fish and Wildlife Service, Chesapeake Bay Field Office, 177 Admiral Cochrane Drive, Annapolis, MD 21401 (410) 573-4500.

States included: KY, WV, OH, VA, DC, MD, DE, PA, NJ, NY, RI, CT, MA, VT, NH, ME

Latin Name	Common Name	Type A/P	Color	Ht	Bloom Period	Moisture Dry, Average, Wet			Soil Sand, Loam, Clay			Sun Full Sun, Partial Sun, Shade		
						D	A	W	S	L	C	F	P	S
<i>Wildflowers</i>														
<i>Aquilegia canadensis</i>	Eastern Columbine	P	Scarlet	1-2'	Mar-May	•	•			•	•	•	•	•
<i>Asclepias incarnata</i>	Swamp Milkweed	P	Pink	3-5'	Jun-Aug		•	•	•	•	•	•	•	
<i>Asclepias tuberosa</i>	Butterfly Milkweed	P	Orange	2-3'	Jun-Aug	•			•	•		•		
<i>Aster laevis</i>	Smooth Aster	P	Violet	2-4'	Aug-Oct	•	•		•	•		•		
<i>Aster novae-angliae</i>	New England Aster	P	Purple	2-6'	Aug-Oct	•	•		•	•	•	•	•	
<i>Caltha palustris</i>	Marsh Marigold	P	Yellow	1-2'	Apr-May		•	•	•	•			•	•
<i>Chelone glabra</i>	White Turtlehead	P	White	2-4'	Aug-Sep			•	•	•		•	•	
<i>Coreopsis lanceolata</i>	Lanceleaf Coreopsis	P	Yellow	1-2'	Jun-Aug	•	•		•	•		•		
<i>Coreopsis tinctoria</i>	Tickseed Sunflower	A	Yellow	1-3'	Jun-Sep	•						•	•	
<i>Echinacea purpurea</i>	Purple Coneflower	P	Purple	2-3'	Jul-Sep	•	•		•	•	•	•	•	
<i>Eupatorium dubium</i>	Joe Pye Weed	P	Purple	4-7'	Jul-Sep		•	•		•	•			
<i>Eupatorium perfoliatum</i>	Boneset	P	White	3-4'	Jul-Aug		•	•	•	•	•	•		
<i>Eupatorium purpureum</i>	Joe Pye Weed	P	Pink	2-6'	Jul-Sep		•			•				
<i>Iris versicolor</i>	Blue Flag Iris	P	Purple	2-3'	Jun-Jul			•	•	•				
<i>Liatris spicata</i>	Blazingstar	P	Purple	2-5'	Jun-Sep	•	•					•	•	
<i>Lobelia cardinalis</i>	Cardinal Flower	P	Red	2-5'	Jul-Sep		•	•	•	•		•	•	
<i>Lupinus perennis</i>	Lupine	P	Blue	1-2'	May-Jun	•	•		•			•	•	
<i>Monarda didyma</i>	Bee Balm	P	Scarlet	2-4'	Jun-Jul		•	•		•	•	•	•	
<i>Monarda fistulosa</i>	Wild Bergamot	P	Lavender	2-5'	Jun-Jul	•	•		•	•	•	•	•	•
<i>Oenothera biennis</i>	Evening Primrose	A/P	Yellow	3-6'	Jun-Oct	•	•		•	•		•	•	
<i>Oenothera perennis</i>	Sundrops	P	Yellow	1-3'	May-Aug	•			•					
<i>Penstemon digitalis</i>	Smooth Penstemon	P	White	2-3'	Jun-Jul	•	•		•	•	•	•	•	
<i>Penstemon leavigatus</i>	Beardtongue	P	White	1-2'	May-Jun		•			•			•	•

						Moisture Dry, Average, Wet			Soil Sand, Loam, Clay			Sun Full Sun, Partial Sun, Shade		
Latin Name	Common Name	Type A/P	Color	Ht	Bloom Period	D	A	W	S	L	C	F	P	S
<u>Wildflowers</u>														
<i>Phlox divaricata</i>	Blue Phlox	P	Blue	.5-1'	Apr-May		•			•			•	•
<i>Rudbeckia hirta</i>	Black Eyed Susan	P	Yellow	1-3'	Jul-Sep	•	•		•	•	•	•	•	
<i>Solidago rugosa</i>	Rough Goldenrod	P	Yellow	3-5'	Aug-Oct		•	•	•	•		•	•	
<i>Thalictrum dayscarpum</i>	Meadowrue	P	White	3-6'	Jun-Jul		•	•	•	•	•	•	•	
<i>Vernonia noveboracensis</i>	New York Ironweed	P	Purple	5-8'	Aug-Sep		•	•		•	•	•	•	
<i>Viola pedata</i>	Birds Foot Violet	P	Purple	1'	Mar-Jun	•			•	•		•		

						Moisture Dry, Average, Wet			Soil Sand, Loam, Clay			Sun Full Sun, Partial Sun, Shade		
Latin Name	Common Name	Type A/P	Color	Ht	Bloom Period	D	A	W	S	L	C	F	P	S
<u>Grasses</u>														
<i>Andropogon gerardi</i>	Big Bluestem	P	☞	3-8'		•	•	•	•	•	•	•	•	
<i>Andropogon virginicus</i>	Broomsedge	P		1-3'		•	•		•	•	•	•	•	
<i>Elymus canadensis</i>	Canada Wild Rye	P				•	•		•	•	•	•	•	
<i>Panicum virgatum</i>	Switchgrass	P		3-6'			•	•	•	•	•	•		
<i>Schizachyrium scoparium</i>	Little Bluestem	P		4'		•	•		•	•		•	•	
<i>Sorghastrum nutans</i>	Indiangrass	P		5-7'		•	•		•	•		•	•	

☞ **Note:** The grasses are various shades of greens, blues, goldens, coppers during different times of the year.

This list was developed from several sources and represents only a partial list of species. Most species were selected because of their availability from some seed companies. Most plants are also available in pots.

Sampling of Other Native Plants

	Name	Height	Features
Evergreen Trees	American Holly, <i>Ilex opaca</i>	45'	red berry; wildlife value; needs moist, acid soil
	Eastern Red Cedar, <i>Juniperus virginiana</i>	80'	pyramidal; wildlife value; thick branches, dense foliage; tolerates poor soils
	Canadian Hemlock, <i>Tsuga canadensis</i>	90'	pyramidal; dense habitat; wildlife value; prefers rich, moist soil
Deciduous Trees	Shagbark Hickory, <i>Carya ovata</i>	60-80'	oval; narrow habitat; nuts; wildlife value; needs deep, rich soil and sun
	White Oak, <i>Quercus alba</i>	60-90'	round-headed, largest of oaks; wildlife value; tolerates range of soils
	Sourwood, Sorrel Tree, <i>Oxydendron arboreum</i>	40-60'	pyramidal; flowers in July, glossy foliage, striking fall color
Evergreen Shrubs	Inkberry, <i>Ilex glabra</i>	3-15'	globular; nectar for bees, open habit, small leaf, black berry; tolerates sandy, peaty, acid soil
	Bayberry, <i>Myrica pensylvanica</i>	4-8'	persistent leaves, aromatic; wildlife value; tolerates dry, sandy soils
	Wax Myrtle, <i>Myrica cerifera</i>	25-30'	persistent leaves; wildlife value; grayish-waxy fruit, inconspicuous flowers
Deciduous Shrubs	Red Chokeberry, <i>Aronia arbutifolia</i>	9'	flowers May-June, smooth pale leaves, red berry; wildlife value; tolerates wet acid or dry soil
	Sweet Pepperbush, <i>Clethra alnifolia</i>	6'	oval; fragrant flower July-Aug, persistent brown seed; wildlife value; tolerates acid wet or dry soil and some shade
	Flame Azalea, <i>Rhododendron calendulaceum</i>	9'	oval; May-June flower; tolerates dry, acid soil and light shade
Ground Covers	Violet Wood Sorrel, <i>Oxalis violacea</i>	4-8"	excellent for rock gardens; tolerates some shade, dry soil, and drought
	Blazing Star, <i>Liatrus spicata</i>	1-3"	rose-purple flowers, late summer bloom, hairy stem
	Bird-Foot Violet	2-6"	purple flowers; tolerates some shade, dry soil, and drought

Some Native Plant Nurseries

Note, the Department of Natural Resources neither recommends nor endorses any particular company. The following is not a complete list of native plant nurseries. Contact the U.S. Fish and Wildlife Service for a more complete list of nurseries. Contact the nurseries directly for catalogues. Most will ship or deliver plants.

MARYLAND

Atlantic Star Nursery

Sam Jones
620 Pyle Road
Forest Hill, MD 21237
(410) 838-7950
Email: atlanstr@magnus.net

Babikow Greenhouses

7838 Babikow Road
Baltimore, MD 21237
(410) 391-4200
(410) 574-7582 (fax)

Kurt Bluemel Inc.

2740 Greene Lane
Baldwin, MD 21013
(410) 557-7229
(410) 557-9785 (fax)

Bluemount Nursery

2103 Bluemount Road
Monkton, MD 21111
(410) 329-6226
(410) 329-8120

Web: www.bluemount.com

Clear Ridge Nursery, Inc.

217 Clear Ridge Road
Union Bridge, MD 21791
(410) 848-4789
(410) 848-5806(fax)

Conard-Pyle

613 Hayden Road
Centreville, MD 21617
(410) 758-3766
(410) 758-3769 (fax)
also in Pennsylvania

Cone Brook Nursery

P.O. Box 177
2737 Grier Nursery Road
Forest Hill, MD 21050
(410) 838-4747

Environmental Concern, Inc.

P.O. Box P, 201 Boundary Lane
St. Michaels, MD 21663
(410) 745-9620
(410) 745-3517 (fax)
Web: www.wetland.org

Fiddler's Green Nursery

J. Christopher Batten, Inc.
3907 Old Taneytown Road
Taneytown, MD
(410) 751-0424

Heartwood Nursery

2121 Blue Mount Road
Monkton, MD 21111
(410) 343-0390
(410) 357-8799 (fax)

Kollar Environmental Services

5200 West Heaps Road
Pylesville, MD 21132
(410) 836-0500
(410) 836-1931
Email: kollars@earthlink.net

Lower Marlboro Nursery

P.O. Box 1013
Dunkirk, MD 20754
(301) 812-0808

Native Seeds, Inc.

14590 Triadelphia Mill Road
Dayton, MD 21036
(301) 596-9818

Providence Center Inc.

370 Shore Acres Road
Arnold, MD 21012
(410) 757-7800
(410) 974-0121 (fax)

Signature Horticultural Services

19960 Gore Mill Road
Freeland, MD 21053
(410) 329-6466
(410) 329-2156 (fax)

NEW JERSEY

Pinelands Nursery

323 Island Road
Columbus, NJ 08022
(609) 291-9486
(609) 298-8939 (fax)
Web: www.pinelandsnursery.com

PENNSYLVANIA

Bowman's Hill Wildflower Preserve/Seed Catalog

PO Box 685
New Hope, PA 19838-0685
(215) 862-2924
(215) 862-1846 (fax)
Email: bhwp@bhwp.org
Web: www.bhwp.org

Ernst Conservation Seeds

9006 Mercer Pike
Meadville, PA 16335
(800) 873-3321
(814) 336-2404
(814) 336-5191 (fax)

North Creek Nurseries

388 North Creek Road
Ladenburg, PA 19350
(610) 255-0100
(610) 255-4762 (fax)
Web: www.northcreeknurseries.com

Octoraro Wetland Nursery

6126 Street Road
Kirkwood, PA 17536
(717) 529-3160
(717) 529-4099 fax

Sylvia Native Nursery and Seed

3815 Roser Road
Glen Rock, PA 17327
(717) 227-0486
(717) 227-0484 (fax)

VIRGINIA

Bobtown Nursery

16212 Country Club Road
Melfa, VA 23410
(800) 201-4714
(757) 787-8484
(757) 787-8611 (fax)
Email: bobtown@visi.net

WISCONSIN

Prairie Nursery

PO Box 306
Westfield, WI 53964
(608) 296-3679
(608) 296-2741 (fax)

FOR MORE PLANT INFORMATION

Irvine Natural Science Center

8400 Greenspring
Stevenson, MD 21153
(410) 484-2413
(410) 484-3573 (fax)
Web: www.explorenature.org

MD Native Plant Society

P.O. Box 4877
Silver Spring, MD 20914
Web: www.mdflora.org

The National Arboretum

Education Department
3501 New York Ave., NE
Washington DC 20002
(202) 245-4521
(202) 245-4575
Web: www.usna.usda.gov

Delaware Nature Society

PO Box 700
Hockessin, DE 19707
(302) 239-2334
(302) 239-2473 (fax)
Web: www.delawarenaturesociety.org

INTEGRATED PEST MANAGEMENT MAIL ORDER SUPPLIERS

Alternative Garden Supply, Inc.

615 Industrial Drive, Unit A
Cary, IL 60013
(800) 444-2837
Web: www.altgarden.com

Gardens Alive!

5100 Schenley Place
Lawrenceburg, IN 47025
(812) 537-8651 or 8650

Gempler's Pest Management Supply Company

100 Countryside Drive
PO Box 270
Belleville, WI 53508
(800) 272-7672
(608) 424-1661 (fax)
Web: www.gemplers.com

Appendix IV. Recycling Coordinators, Oil/Antifreeze Haulers, and Light Bulb Disposal Sources

The names of the county recycling contacts listed below were taken from the Maryland Department of the Environment's web page (www.mde.state.md.us/was/recycle/index.html). Refer to this page for information about drop-off sites. Maryland Environmental Service is another excellent source of information regarding drop-off centers, industrial recyclers, and recyclable materials. Call Maryland Environmental Service at 1-800-4-RECYCLE.

County Recycling Contacts

Allegany County

Recycling Coordinator
Allegany County Dept. of Public Works
701 Kelly Road
Cumberland, MD 21502
(301) 777-5933
(301) 777-2001 (fax)

Anne Arundel County

Department of Public Works
Waste Management Services, Recycling Division
2662 Riva Road, MS-7207
Annapolis, MD 21401
(410) 222-7951
(410) 222-7505 (fax)

Baltimore City

Recycling Coordinator
Bureau of Solid Waste
201 Abel Wolman Municipal Bldg.
200 Holliday Street
Baltimore, MD 21202
(410) 396-5916
(410) 396-2964 (fax)

Baltimore County

Bureau of Solid Waste Mgmt.
County Office Bldg., Room 225
111 West Chesapeake Avenue
Towson, MD 21204
(410) 887-3188
(410) 887-4370 (recording)
(410) 887-2931 (fax)

Calvert County

Office of Recycling
P.O. Box 1330
401 Sweetwater Road
Lusby, MD 20657
(800) 560-1004
(410) 326-0210
(410) 586-9461 (fax)

Caroline County

Recycling Coordinator
Caroline Co. Dept. of Public Works
P.O. Box 386
Denton, MD 21629
(410) 479-4142
(410) 479-0409 (fax)

Carroll County

Vinnie Legge
Carroll County Government
225 North Center Street, Suite 105
Westminster, MD 21157-5107
(410) 386-2633
(410) 876-8284 (fax)

Web: www.ccgov.carr.org/recycle

Cecil County

Operating Manager
129 East Main Street, Room 308
County Office Bldg.
Elkton, MD 21921
(410) 996-6275
(410) 287-4608 (fax)

Charles County

Chief of Solid Waste
Department of Public Facilities
1001 Radio Station Road
La Plata, MD 20646
(301) 932-3440
(301) 932-3449 (fax)

Dorchester County

Dorchester Co. Highway Department
P.O. Box 26
Cambridge, MD 21613
(410) 228-2920
(410) 228-9516 (fax)

Frederick County

Recycling Manager or Coordinator
Division of Public Works
9031 Reichs Ford Road
Frederick, MD 21704
(301) 694-1848
(301) 631-3044 (fax)

Garrett County

Director
Garrett County Office of Solid Waste
3118 Oakland–Sang Run Road
Oakland, MD 21550
(301) 387-0322
(301) 334-2224 (fax)

Harford County

Recycling Coordinator
Division of Environmental Affairs
220 S. Main Street
Bel Air, MD 21014
(410) 638-3417
(410) 836-6695 (fax)

Howard County

Bureau of Waste Management, Recycling Division
6751 Columbia Gateway Drive
Columbia, MD 21046
(410) 313-6444
(410) 313-6490 (fax)

Kent County

Recycling Coordinator
Kent County
709 Morgnec Road
Chestertown, MD 21620
(410) 778-7448
(410) 778-7424 (fax)

Montgomery County

Department of Environmental Protection/Public Works
255 Rockville Pike, Suite 120
Rockville, MD 20850
(240) 777-6400
(301) 590-0046, Recycling Hotline
(240) 777-7765 (fax)
Web: www.co.mo.md.us

Prince George's County

Recycling Manager
Office of Recycling
9400 Peppercorn Place, 5th Floor
Largo, MD 20785
(301) 883-5045
(301) 883-7645 (fax)

Queen Anne's County

Recycling Coordinator
Queen Anne's County
P.O. Box 56
312 Safety Drive
Centreville, MD 21617
(410) 758-2697
(410) 758-6605
(410) 758-3341 (fax)
(410) 758-6606 (fax)

Somerset County

Director of Solid Waste Management
Somerset County Government
424 N. Somerset Avenue
Princess Anne, MD 21853
(410) 651-9641
(410) 651-1156 (fax)

St. Mary's County

Recycling Coordinator
St. Mary's Co. Dept. of Public Works
Engineering Services
P.O. Box 508
California, MD 20619
(301) 863-8400
(301) 863-8810 (fax)

Talbot County

Brian Moore
Talbot County Dept. of Public Works
605 Port Street
Easton, MD 21601
(410) 770-8167
(410) 770-8176 (fax)

Washington County

Recycling Coordinator
Washington County
13300 Green Castle Pike
Hagerstown, MD 21740
(301) 791-3348
(301) 791-3119 (fax)

Wicomico County

Director, Solid Waste
P.O. Box 968
Salisbury, MD 21803-0968
(410) 548-4810
(410) 548-4941 (fax)

Worcester County
Recycling Coordinator
Central Facility Landfill
7091 Central Site Lane
Newark, MD 21841
(410) 632-3177
(410) 632-3000 (fax)

State of Maryland
Chief Recycling Division
Department of the Environment
2500 Broening Highway
Baltimore, MD 21224
(410) 631-3315
(410) 631-3321 (fax)

Used Motor Oil and Antifreeze Haulers

Note, the following is not a complete list of motor oil and antifreeze haulers. The Department of Natural Resources neither recommends nor endorses any particular company.

U.S. Filter/Eastern Oil Company

5800 Farrington Avenue
Alexandria, VA 22304
(800)-673-8521
(703) 370-8205
(703) 370-6481 (fax)

- Used oil, antifreeze, oily water
- Serve MD, VA, DC, PA

International Petroleum Corporation (IPC)

6305 E. Lombard Street
Baltimore, MD 21224
(800) 222-2511
(410) 633-0789 (fax)

- Used oil
- Serve MD, DE, VA, PA, NJ

Mid States Oil Refining Co.

3520 Fairfield Road
Baltimore, MD 21226
also
606 Lewisville Road
Fair Hill, MD 21921
(410) 354-9500
(800) 331-5408
(410) 355-0641 (fax)

- Used oil, antifreeze, oily water, and oil filters

Safety-Kleen Corporation

1448 Desota Road
Baltimore, MD 21230
(410) 525-0001
(410) 525-0028 (fax)

- Used oil, solvent recovery
- Serve MD

Fluorescent Tube and PCB Ballast Disposal Sources

Note, the following is not a complete list of fluorescent tube and PCB ballast disposal sources. The Department of Natural Resources neither recommends nor endorses any particular company.

Advanced Environmental Technical Services

3 Elm Drive, Suite 5
New Freedom, PA 17349
(888) 877-2387

- Metallic mercury, fluorescent tubes, mercury contaminated devices

Universal Appliance Recycling

8500 Ardmore Lane
Landover, MD 20785
(301) 773-3400
(301) 773-5084 (fax)

- All used appliances, will remove and dispose of PCB capacitors, if they are part of the appliance

USA Lights

3408 52nd Avenue
Hyattsville, MD 20781
(301) 699-6244

- Fluorescent lamps and ballasts. Other hazardous wastes accepted at other facilities.

Bethlehem Apparatus Co.

890 Front Street
P.O. Box Y
Hellertown, PA 18055
(610) 838-7034
(610) 838-6333 (fax)

- Fluorescent lamps, quartz and HID lamps, mercury contaminated devices, on-site mercury distillation

Full Circle Ballast Recyclers

509 Manida Street
Bronx, NY 10474
(800) 775-1516
(718) 328-4462 (fax)

- Fluorescent lamps, ballasts, transformers

Green Lights Recycling Inc.

1116B Kaniwha Boulevard East

Charleston, WV 25301

(800) 704-0794

(304) 347-9950

(304) 347-9948 (fax)

- Fluorescent lamps, HID and mercury lamps, and PCB/non-PCB ballasts

Inmteco

245 Portersville Road

Ellwood City, PA 16117

(724) 758-2800

(724) 758-2845 (fax)

Web: www.inco.com

- Nickel, cadmium, and nickel metal hydride batteries

Appendix V. Sample Contract Language

The following text is based on the Marine Trades Association of New Jersey's *Best Management Pledge*. The language may be incorporated into lease agreements. Contact the Maryland Department of Natural Resources at (410) 260-8770 for an electronic copy.

FOR TENANTS:

I, _____, understand that _____
(name) (marina/boatyard)

subscribes to and enforces pollution prevention procedures. I further understand and agree that in return for the privilege of performing work on a boat at this facility such as hull cleaning, washing, sanding, polishing and/or painting; bottom cleaning, sanding, scraping, and/or painting; opening the hull for any reason, *e.g.*, installation of equipment or engine work; engine and/or stern drive maintenance, repair, painting; etc., it is my responsibility to comply with, at a minimum, the following pollution prevention practices. I understand that this list may not be complete and pledge that I will exercise common sense and judgment in my actions to insure that my activities will not deposit pollution residues in surface waters or elsewhere where they may be conveyed by stormwater runoff into the surface waters. I understand that failure to adopt pollution prevention procedures may result in expulsion from the marina/boatyard (*insert name of facility*) and forfeiture of rental fees. I understand that I may elect to employ the facility to perform potential pollution producing activities on my behalf in which case the responsibility for compliance with the best management practices is entirely theirs.

Signed _____ Date _____

FOR SUB-CONTRACTORS ONLY:

I understand and agree to have my proposed work first authorized by this facility and that I will adhere, at a minimum, to the contents of this document. I further understand that because of the nature of my proposed work, the facility may require that I be supervised by an employee of said facility for which I will pay the normal existing labor rate.

Signed _____ Date _____

POLLUTION PREVENTION PRACTICES:

A. REPAIRS AND SERVICE (to hull and engine: painting, cleaning, washing, sanding, scraping, etc.)

1. Work on hulls and engines only in designated areas or use portable containment enclosures with approval of marina management.
2. Use tarps and vacuums to collect solid wastes produced by cleaning and repair operations—especially boat bottom cleaning, sanding, scraping, and painting.
3. Conduct all spray painting within an enclosed booth or under tarps.
4. Use non-toxic, biodegradable solvents.

5. Capture debris from boat washing and use only minimal amounts of phosphate-free, non-toxic, and biodegradable cleaners.
6. Use drip pans for any oil transfers, grease operations, and when servicing I/Os and outboard motors.
7. Obtain management approval before commencing any repair which will open the hull. Clean and pump bilges free of contaminated materials before and after repairs which open the hull.
8. Use spill proof oil change equipment.

B. VESSEL MAINTENANCE WASTE

1. Non-toxic residue of sanding, scraping, and grinding: bag and dispose of in regular trash.
2. Toxic and non-environmentally safe solvents and cleaning liquids: seek specific directions from marina management or dispose of with licensed agency.

C. FUEL OPERATIONS

1. Install fuel/air separator on fuel tank vent line(s) to prevent overflow of fuel through vent.
2. Keep petroleum absorbent pad(s) readily available to catch or contain minor spills and drips during fueling.

D. WASTE OIL AND FUEL

1. Recycle used oil and antifreeze.
2. Add a stabilizer to fuel tank in the fall or an octane booster to stale fuel in the spring. Use the fuel or bring it to a household hazardous waste collection site.
3. Absorbent materials soaked with oil or diesel: drain liquid and dispose of in used oil recycling container; double bag absorbent material in plastic and dispose in regular trash receptacle.
4. Absorbent materials soaked with gasoline (flammable): air dry and reuse.
5. Bioremediating absorbent products: dispose in regular trash as long as no liquid is dripping. Because the microbes need oxygen to function, do not seal in plastic.
6. Oil filters: drain and recycle the oil; recycle the filter or double bag and put in regular trash.

E. ONBOARD PRACTICES

1. Maintain oil absorbent pads in bilge. Inspect no less than annually.
2. Do not discharge bilge water if there is a sheen to it.
3. Use only low-toxic antifreeze (propylene glycol). Recycle used antifreeze (even low-toxic antifreeze will contain heavy metals once it has been used).

F. SEWAGE HANDLING

1. Never discharge raw sewage within Maryland waters.
2. If you have an installed toilet, you must have an approved Marine Sanitation Device (MSD).
3. Do not discharge Type I or Type II marine sanitation devices within the marina basin.
4. Use marina restroom facilities when at slip.
5. Do not empty port-a-pots overboard; use marina dump facility. Do not empty port-a-pots in the restrooms.
6. Do not discharge holding tanks overboard; use pumpout facility.
7. If you must use a holding tank additive, use an enzyme-based product. Avoid products that contain quaternary ammonium compounds (QACs), formaldehyde, formalin, phenal derivatives, alcohol bases, or chlorine bleach.
8. Liveaboards, place a dye tablet in holding tank after each pumpout out. The dye will make any illegal discharges clearly visible.

G. ORGANIC WASTE

1. Clean fish only in designated areas.
2. Grind, compost, or double bag fish scraps (*depending on the services offered by your marina*).
3. Walk pets in specified areas and dispose of their wastes, double-bagged, in the dumpster.

H. SOLID WASTE

1. Recycle plastic, glass, aluminum, newspaper, and used lead batteries (*tailor this section to fit your facility's practices*).
2. Place trash in covered trash receptacles; replace covers.

Appendix VI. Spill Response Companies

Note, the following is not a complete list of spill response companies. The Department of Natural Resources neither recommends nor endorses any particular company.

A & A Environmental Services

5200 Raynor Avenue
Linthicum, MD 21090
(410) 636-3700
(410) 636-0260 (fax)

- Oil
- Limited haz-mat
- Underground storage tanks

A.C. & T Company, Inc.

11535 Hopewell Road
Hagerstown, MD 21740
(800) 458-3835
(301) 582-2719 (fax)

Web: www.acandt.com

- Limited oil

C & R Industries

5555 Branchville Road
College Park, MD 20740
(301) 441-4824
8:30-5:00

- Antifreeze recycler

Clean Harbors Company

1910 Russell Street
Baltimore, MD 21230
(800) 622-3360
(410) 244-8210

- Oil
- Haz-mat

GSM Environmental, Inc.

P.O. Box 639
Royersford, PA 19468
(610) 495-3000
(800) 258-5585
(610) 495-6697 (fax)

- Oil
- Limited haz-mat
- Underground storage tanks

GTS Duratek

10100 Old Columbia Road
Columbia, MD 21046
(410) 312-5100
(410) 290-9070 (fax)

- Provides temporary environmental professionals

Guardian Environmental Svc., Inc.

1280 Porter Road
Bear, DE 19701
(302) 834-1000
(800) 345-4395
(302) 834-0386 (fax)

- Oil
- Haz-mat
- Underground storage tanks

I.T. Corporation.

Division of O.H.M. Corp.
Four Research Way
Princeton-Forestal Center
Princeton, NJ 08540
(800) 537-9540

- Oil
- Haz-mat
- Underground storage tanks

Laidlaw Environmental Services (TS Inc)

3527 Whiskey Bottom Road
Laurel, MD 20724
(301) 953-9583
(410) 792-7507
(800) 638-4440
(301) 939-6066 (fax)

- Oil
- Haz-mat
- T.S.D. facility

Nutshell Enterprises, Ltd.

4059 Norrisville Road
Jarrettsville, MD 21084
(410) 557-7583
(410) 557-8804 (fax)

- Limited oil
- Underground storage tanks

Remtech Environmental Group

550 Industrial Drive
Lewisberry, PA 17339-9537
or
1800 Carman Street
Camden, NJ 08105
(717) 938-4700
(609) 365-5544

- Limited oil
- Limited haz-mat
- Underground storage tanks

Sea Tow Annapolis

David DuVall

PO Box 3113

Annapolis, MD 214403

(410) 267-7650

(410) 267-9556 (fax)

Email: seatowmcc@earthlink.net

- Towing and salvage
- Spill containment
- Minor spill clean up

Tri-County Industries, Inc.

5135 Frolich Lane

Hyattsville, MD 20781

(301) 937-8611

(301) 937-9028 (fax)

Web: www.tricountyindustries.com

- Oil
- Limited haz-mat
- Underground storage tanks

Appendix VII. Local Economic Development Contacts

From *MDE Facts About*. . . Local Permitting Issues for Recycling and Composting Facilities.

Local economic development staffs can help make you aware of local permitting and regulatory requirements. They can serve as liaisons with the local administration and other local agencies, such as Planning and Zoning, Licenses and Permits, Public Works, and the local Soil Conservation District.

Allegany

Allegany County Economic Development
701 Kelly Road
Cumberland, MD 21502
(410) 777-5967
(800) 555-4080
(410) 777-2194 (fax)
Email: all4jobs@alleganyworks.org
Web: www.alleganyworks.org

Anne Arundel

AA Co. Economic Development Corp.
2660 Riva Road, Suite 200
Annapolis, MD 21401
(410) 222-7410
(410) 222-7415 (fax)
Email: info@aaedc.org
Web: www.aaedc.org

Baltimore City

Baltimore Development Corporation (BDC)
36 S. Charles Street, Suite 1600
Baltimore, MD 21201
(410) 837-9305
(410) 547-7211 (fax)
E Mail: infor@baltimoredevelopment.com
Web: www.baltimoredevelopment.com

Baltimore

Dept of Economic Development
Court House Mezzanine
400 Washington Avenue
Towson, MD 21204
(410) 887-8000
(410) 887-8017 (fax)
Email: econdev@co.ba.md.us
Web: www.bcinfobank.com

Calvert

Dept of Economic Development
175 Main Street
Prince Frederick, MD 20678
(410) 535-4583 or (800)331-9771
(410) 535-4585 (fax)
Email: cced@co.cal.md.us
Web: www.co.cal.md.us/cced

Caroline

Economic Development Corporation
Button Factory Building
317 Carter Ave, Suite 107
Denton, MD 21629
(410) 479-4188
(410) 479-4061 (fax)
Email: n/a

Carroll

Dept. of Economic Development
255 N. Center Street
Westminster, MD 21157
(410) 876-2450 or
Balt. (410) 876-2085 ext. 2070
(410) 876-8471 (fax)
Email: econdev@carr.org
Web: www.econdev.carr.org

Cecil

Office of Economic Development
1 Seahwak Drive, Suite 114
North East, MD 21901
(800) CECIL95
(410) 996-6279 (fax)
Email: dloller@ccgov.org
Web: www.cecilbusiness.org

Charles

Charles Co. Community College
8730 Mitchell Road
PO Box 910, Mitchell Road
LaPlata, MD 20646-0910
(301) 934-7632
(301) 934-7656 (fax)
Email: aubrey@charles.cc.md.us

Dorchester

Dorchester Co. Economic Development Office
County Office Building
501 Court Lane, PO Box 26
Cambridge, MD 21613
(410) 228-0155
(410) 228-9518 (fax)
Email: n/a

Frederick

Frederick Co. Economic and Community Development
1800 N. Market Street, Suite 200
Frederick, MD 21701
(800) 248-2296
(301) 694-1058
(301) 631-2340 (fax)
Email: info@discoverfrederickmd.com
Web: www.discoverfrederickmd.com

Garrett

Economic Development Department
203 S. Fourth Street, Room 208
Oakland, MD 21550
(301) 334-1921
(301) 334-1985 (fax)
Email: economicdevelopment@garrettcountry.org
Web: www.garrettcountry.org

Harford

Office of Economic Development
220 S. Main Street
Bel Air, MD 21014
(410) 879-2000
(410) 879-8043 (fax)
Email: denisebc@co.ha.md.us

Howard

Howard Co. Economic Development Authority
6751 Columbia Gateway Dr, Suite 500
Columbia, MD 21046
(410) 313-6500
(410) 313-6525 (fax)
Email: rstory@hceda.org
Web: www.hceda.org

Kent

Economic Development Office
103 N. Cross Street
Chestertown, MD 21620
(410) 778-7434
(410) 778-7482 (fax)
Email: econdev.edgerd@co.mo.md.us

Montgomery

Office of Economic Development
101 Monroe Street, Suite 1500
Rockville, MD 20850
(301) 217-2345
(301) 217-2045 (fax)
Email: kentcounty@kentcounty.com
Web: www.kentcounty.com

Prince George's

Prince George's Co. Economic Development Corporation
4640 Forbes Blvd., Suite 200
Lanham, MD 20706
(301) 429-3044
(301) 429-8762 (fax)
Email: info@pgcedc.com
Web: www.pgcedc.com

Queen Anne's

Queen Anne's Co. Economic Development Commission
433 Piney Narrows Road
Chester, MD 21619
(410) 758-0371
(410) 758-0366 (fax)
Email: edcdept@qac.org
Web: www.qac.org/busnsdev/econdev.html

St. Mary's

Dept of Economic and Community Development
PO Box 653, 23115 Leonard Hall Drive
Leonardtown, MD 20650
(301) 475-4405
(301) 475-4414 (fax)
Email: decdd@co.saint-marys.md.us
Web: www.co.saint-marys.md.us

Somerset

Somerset Co. Economic Development Commission
11916 Somerset Avenue, Suite 202
Princess Anne, MD 21853
(410) 651-0500
(410) 651-3836 (fax)
Email: edc@co.somerset.md.us
Web: www.co.somerset.md.us

Talbot

Talbot County Office of Economic Development
29137 Newnam Road, Unit One
Easton, MD 21601
(410) 770-8058
(410) 822-8694 (fax)
Email: dhayes@talbgov.org
Web: www.talbgov.org/econdev/econserv.html

Washington

Hagerstown-Washington Co. Economic Development
Comm.
100 W. Washington Street, Room 103
Hagerstown, MD 21740
(240) 313-2280
(240) 313-2281 (fax)
Email: edcinfo@hagerstownedc.org
Web: www.hagerstownedc.org

Wicomico

Salisbury-Wicomico Economic Development
1 Plaza East, Suite 501
Salisbury, MD 21803
(410) 749-1251
(410) 749-1252 (fax)
Email: info@swed.org
Web: www.swed.org

Worcester

Dept. of Economic Development
113 Franklin Street, Unit 2
Snow Hill, MD 21863
(800) 852-0335
(410) 632-3112
(410) 632-5631 (fax)
Email: ecodevo@exy.net
Web: www.skipjack.net/le_shore/worcestr/

STATEWIDE

Maryland Depart. of Business and Economic Development
217 E. Redwood Street
Baltimore, MD 21202
(800) 541-8549
(410) 767-6870
(410) 333-6911
Web: www.ChooseMaryland.org

Spill Prevention, Control and Countermeasure Plans

Background

What is a Spill Prevention, Control and Countermeasure (SPCC) Plan?

An SPCC plan is a written document that describes measures one has taken to prevent, contain and clean up oil spills. The term "oil" includes gasoline, diesel, heating oil, and solvents. All SPCC plans must be certified by a professional engineer.

Who needs an SPCC Plan?

* Reflects changes made to this rule effective August 16, 2002.

Any boating facility that has

- an aggregate aboveground petroleum storage capacity greater than 1,320 gallons

must have a Spill Prevention, Control and Countermeasure plan.

Are SPCC plans required by law?

Yes, SPCC plans are required by federal regulation 40 CFR 112 which is implemented by the U.S. Environmental Protection Agency.

Can I prepare my own SPCC plan?

Any facility operator may draft his or her own SPCC plan. The plan must be certified by a professional engineer, however.

Instructions to Obtain Free SPCC Plan

To alleviate the financial hardship that plan certification poses for some marinas, the Clean Marina Initiative has hired the engineering firm of Purdum and Jeschke to review and certify SPCC plans at no cost to marinas.

To be eligible for this service, boating facility operators must submit the following items to the Clean Marina office:

- A signed Clean Marina Pledge.
- A completed self-assessment, i.e, Clean Marina Award Checklist. Priority will be given to facilities that meet the Clean Marina Award Criteria in all aspects except the SPCC requirement.
- Draft of an SPCC plan prepared using the attached template.

Once Clean Marina staff receive the items listed above, they will forward a copy of the draft SPCC plan to Purdum and Jeschke.

Clean Marina staff will notify the marina when they are authorized to schedule a site visit with a representative from the engineering firm. During the site visit, an engineer will verify the adequacy of oil spill prevention measures and the accuracy of the SPCC plan. Assuming that the engineer is satisfied with the preparations at the marina, he or she will certify the SPCC plan and provide copies to the marina and the Clean Marina office.

- Download the SPCC template in [MS Word](#).
- Download the SPCC template in [WordPerfect](#).
- Download a ["frame" for your site map, \(Adobe Acrobat file 18KB\)](#).
 - **NOTE:** When downloading the **Word and WordPerfect files** it is best to right click the link with your mouse and choose either save as or save target as. This will allow you to save the files to your computer and then you can open them up in your word processor.

[The free Acrobat reader](#) is needed to view the frame of your site map.

Submit pledge, checklist, and draft SPCC plan to:

Beth Fuller Valentine
 Maryland Clean Marina Initiative
 Maryland Department of Natural Resources
 580 Taylor Ave., E2
 Annapolis, MD 21401
 410-260-8776 (phone) - 410-260-8779 (fax)
bvalentine@dnr.state.md.us

Additional Information

How long will this service be available?

A finite amount of money has been set aside for the certification of SPCC plans. Once the funding is gone, so is the service. To make the most economical use of State funds and the engineers' time, therefore, we will make every effort to schedule multiple site visits on a single day. This approach may mean that a particular facility has to wait several weeks after submitting their draft SPCC plan before a site visit is scheduled. You can help us to minimize this lag time by encouraging your neighboring marinas (those that need SPCC plans) to submit their materials at the same time that you submit yours.

What counts toward storage capacity?

Storage capacity includes the capacity of all containers such as tanks, portable tanks, transformers, 55-gallon drums, etc. The capacity of any empty containers that may be used to store oil and are not permanently taken out of service are also counted in a facility's total storage capacity. Containers less than 55 gallons are exempt from the scope of these rules as of August 16, 2002.

Does the term "oil" include vegetable oil, transformer oil, and other non-petroleum based oil?

Yes. "Oil" is defined in 40 CFR 112.2 as oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes other than dredge spoil. This definition has been interpreted to include vegetable oil, mineral oil, transformer and other oils.

Who do I give the SPCC plan to?

A copy of the entire SPCC plan must be maintained at the marina if the facility is normally attended at least eight hours per day, or at the nearest field office if the facility is not so attended.

Since a boating facility must be in compliance with all applicable laws and regulations in order to be certified as a Maryland Clean Marina, any facility wishing to be recognized as a Clean Marina and that is subject to the SPCC requirements must submit a copy of its SPCC plan to the Clean Marina office.

The SPCC plan is not required to be filed with the U.S. EPA, but a copy must be available for on-site review by the regional administrator during normal working hours. The SPCC plan must be submitted to the U.S. EPA Region III regional administrator and the Maryland Department of the Environment along with the other information specified in 40 CFR 112.4 if either of the following occurs:

- the facility discharges more than 1,000 U.S. gallons of oil into or upon the navigable waters of the United States or adjoining shorelines in a single event, or
- the facility discharges oil in excess of 42 gallons in two spill events within any twelve month period.

How often must I review the SPCC plan?

The facility owner or operator must review the SPCC plan at least every five years. These reviews must be documented.

When do I have to update the SPCC plan?

The SPCC regulation requires the owner or operator to amend the plan whenever there is a change in facility design, construction, operation, or maintenance that materially affects the facility's potential to discharge oil. Such amendments must be fully implemented not later than six months after the change occurs. All amendments must be certified by a registered professional engineer.

Updated on September 9, 2002

Emergency Response Plans

Establish a single binder for all of your emergency response plans. Give it a bright cover and spine so that it stands out. Make sure each employee knows where it is and what type of information it contains.

The first item ought to be a site plan:

- _____ **Site Plan:** Show valves, pipes, tanks, structures, roads, hydrants, docks, power and fuel shutoffs, hazardous material storage locations (e.g., solvents, fuels, pool chemicals, pesticides - indicate quantities), location of response materials, and telephones.

Then, prepare individual plans for all likely threats such as fuel spills, health emergencies, fires, hurricanes, etc. Keep the plans SIMPLE. Include the following information in each.

- _____ **Personnel:** Identify who is responsible for taking what action, e.g., deploying equipment, contacting emergency agencies, etc. Designate one person on the marina staff as the official spokesperson for the facility.

- _____ **Phone Numbers:**
When calling an emergency response agency, be prepared to describe the nature of the emergency, the location and address of the marina, and the exact location within the complex.
 - U.S. Coast Guard National Response Center (fuel spill): 800-424-8802
 - MDE Emergency Response Division (fuel or hazmat spill): 410-974-3551
 - MDE Enforcement (environmental enforcement questions or complaints): 410-631-3400
 - Natural Resources Police (boating emergencies or violations of state waterway regulations): 410-260-8888
 - Maryland Poison Center: 800-492-2414
 - Fire department
 - Police department
 - Local hospital
 - Owner
 - Spill response contractors
 - Neighboring marinas that have emergency response equipment

- _____ **Action:** State what action should be taken during an emergency and, based on likely threats, what equipment should be deployed. Include information about what type of equipment is available on site and what its characteristics and capabilities are. Explain how the equipment should be used and disposed.

ANY PLACE MARINA

1234 Maple Lane ! Any Town, MD 12345 ! 410-123-4567

Fuel Spill Response Plan

for fuel tanks, pumps and oil recycling tanks

1. Stop the flow
2. Contain the spill (*indicate where oil absorbent material is stored*)
3. Notify marina manager/owner (*include home and cell phone numbers*)
4. Call the U.S. Coast Guard's National Response Center at (800) 424-8802
5. Call Maryland Department of the Environment's Emergency Response Division at (410) 974-3551
6. Contact spill response company if necessary

Appendix X. Waste Gasoline Haulers

The following companies will collect small quantities of waste gasoline. Neither the Department of Natural Resources nor our partners in the Clean Marina Initiative recommend or endorse any particular company. If you would like to comment on the service provided by any listed company (positive or negative) or suggest other companies for inclusion, please call the Department at 410-260-8776.

Bay Assoc. & Environmental, Inc.

PO Box 21009
Baltimore, MD 21228
410-719-0707
410-719-2079 (fax)

Bishop & Assoc.

PO Box 39059
Baltimore, MD 21212
410-669-0200
410-669-2997 (fax)

Capitol Environmental Services, Inc.

8229 Boone Blvd., Suite 310
Vienna, VA 22182
703-356-3135
703-356-4198 (fax)

Clean Harbors

1604 Bush Street
Baltimore, MD 21230
800-368-8838
410-244-8210 (fax)

Clean Ventures

806-P Barkwood Court
Linthicum, MD 21090
410-636-8290
410-636-8289 (fax)

Environmental Management Services, Inc.

1684 East Gude Drive, Suite 202
Rockville, MD 20850
301-309-0475
301-309-8052 (fax)

International Petroleum

505 S. Market St.
Wilmington, DE 19801
302-421-9306

International Petroleum

6305 E. Lombard St.
Baltimore, MD 21224
410-633-0606

Remtech Environmental

414 Westside Blvd.
Baltimore, MD 21228
410-747-7286
410-747-5987 (fax)

Safety-Kleen

3527 Whiskey Bottom Road
Laurel, MD 20724
410-792-7507
301-939-6066 (fax)

Stormwater Pollution Prevention Plan

Use the following template to prepare a Stormwater Pollution Prevention Plan as required by General Permit No. 01MA for Discharges from Marinas (effective December 21, 2001, expiration date December 20, 2006).

MARINA INFORMATION	Marina name: _____
	Address: _____

	Phone number: _____

POLLUTION PREVENTION TEAM MEMBER ROSTER	Element #1
	Completed by: _____
	Title: _____
	Date: _____

Leader: _____	Title: _____
Responsibilities: _____	Office phone: _____

Members:	
(1): _____	Title: _____
Responsibilities: _____	Office phone: _____

(2): _____	Title: _____
Responsibilities: _____	Office phone: _____

(3): _____	Title: _____
Responsibilities: _____	Office phone: _____

**Description of Potential
Pollutant Sources**

Element # 2

Completed by: _____

Title: _____

Date: _____

Instructions: List areas that are potential sources of pollutants, e.g., wash down pad, fuel storage tanks.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

DEVELOPING A SITE MAP

Element #3

Completed by: _____

Title: _____

Date: _____

Instructions: Draw a map of your site including a footprint of all buildings, structures, paved areas, and parking lots. The information below describes additional elements required by EPA's General Permit.

The General Permit requires that you indicate the following features on your site map:

- All outfalls and stormwater discharges
- Drainage areas of each stormwater outfall
- Direction of stormwater flow
- Structural storm water pollution control measures, such as:
 - Flow diversion structures
 - Retention/detention ponds
 - Vegetative swales
 - Sediment traps
- Name of receiving waters (or if through a Municipal Separate Storm Sewer System)
- Locations of exposed significant materials
- Locations of past spills and leaks (document under Element #5)
- Locations of any of the following which are exposed to precipitation:
 - Fuel storage tanks and pumps
 - Engine maintenance and repair
 - Vessel maintenance and repair
 - Pressure washing
 - Painting
 - Sanding
 - Blasting
 - Welding
 - Metal fabrication
 - Loading/unloading areas
 - Locations for treatment storage or disposal of wastes
 - Liquid storage (e.g., paint, solvents)
 - Material storage areas (e.g., blasting media)
 - Other areas of concern (specify: _____)

INVENTORY OF EXPOSED MATERIALS		Element #4 Completed by: _____ Title: _____ Date: _____	
		Instructions: List all materials used, stored, or produced on site that may potentially be exposed to precipitation.	
Materials	Method and Location of on-site Storage or Disposal (e.g., pile, drum)	Description, including location, of best management practices used to minimize contact with storm water run off.	Description of any treatment the storm water receives.

LIST OF SIGNIFICANT SPILLS AND LEAKS

Element # 5

Completed by: _____

Title: _____

Date: _____

Directions: Record below all significant spills and leaks of toxic or hazardous pollutants that have occurred at the facility in the three years prior to the effective date of the permit (December 21, 2001).

Definitions: Significant spills include, but are not limited to, releases of oil or hazardous substances in excess of reportable quantities.

[illegible]

SAMPLING DATA		Worksheet # 6 Completed by: _____ Title: _____ Date: _____							
		Instructions: This element is required if you have a bilge water treatment system, i.e., oil/water separator. It is also required if noncontact cooling waters are discharged to waters of the State. Discharges of noncontact cooling water to the ground do not need to be monitored.							
PARAMETER	QUANTITY OR LOADING			QUALITY OR CONCENTRATION			FREQUENCY OF ANALYSIS	SAMPLE TYPE	NOTES
	Monthly Average	Daily Maximums	Units	Minimum	Monthly Average	Daily Maximum			
Flow									
Residual oil and grease							ppm (mg/l)	Grab	
Flow									
Residual chlorine							ppb (ug/l)	Grab	

<div>RISK IDENTIFICATION AND SUMMARY OF POTENTIAL POLLUTANT SOURCES</div>		<div>Element #7</div> <div>Completed by: _____</div> <div>Title: _____</div> <div>Date: _____</div>	
<div>Instructions: List all identified storm water pollutant sources and describe existing management practices that contain those sources. In the third column, list BMP options that can be incorporated into the plan to address remaining sources of pollutants.</div>			
Activity	Pollutant of Concern (e.g. oil, paint)	Existing Management Practices	Description of New BMP Options
1. Loading and unloading activities, e.g., fuel deliveries)			
2. Outdoor storage			
3 Outdoor manufacturing or processing, e.g., welding			
4. Abrasive blasting, sanding and painting			
5. On-site waste disposal			
6.			
7.			
8.			
9.			

MEASURES AND CONTROLS: a. Good Housekeeping b. Preventative Maintenance d. Inspections		Elements # 8 (Parts A, B, and D) Completed by: _____ Title: _____ Date: _____		
Instructions: Describe the storm water management practices or devices that you have selected to control pollutants from the activities noted below.				
ACTIVITY/SOURCE	BRIEF DESCRIPTION OF STORM WATER MANAGEMENT PRACTICE	PLAN FOR PROPER MAINTENANCE OF STORMWATER MANAGEMENT PRACTICE OR DEVICE (e.g., clean sediment traps, change filters)	IDENTIFY STAFF MEMBER TO INSPECT EACH SOURCE AREA MONTHLY (Record inspection results under Element #10)	
Vessel Washing Area				
Blasting Areas				
Painting Areas				
Material Storage Areas				
Engine Maintenance and Repair Areas				
Material Handling Areas (e.g., fuel dock)				
General Yard Area				
Other:				

MEASURES AND CONTROLS:**c. Spill Prevention
and Response
Procedures****Element # 8 (Part C)**

Completed by: _____

Title: _____

Date: _____

Instructions: Specify procedures for cleaning up spills associated with all potential pollutant sources. Note: If you have a certified *Spill Prevention, Control and Countermeasure Plan* (SPCC) include it by reference here in lieu of completing the fuel storage and dispensing elements of this worksheet.

POTENTIAL POLLUTION SOURCE	SPILL RESPONSE PROCEDURES
Blasting and Painting Areas	
Material Storage Areas (e.g., fuel tanks, recycling collection areas)	
Material Handling Areas (e.g., paint mixing shed, fuel loading area)	
Fuel Dispensing Area (e.g., fuel dock)	
General Yard Area	
Other:	
Other:	

EMPLOYEE TRAINING		Element # 9 Completed by: _____ Title: _____ Date: _____	
Instructions: Employees must be trained twice per calendar year on the following topics as applicable. Training should be documented using this worksheet. Also inform independent contractors and customers about pollution prevention measures (e.g., through contracts or signs).			
Training Topics	Brief Description of Training Program/Materials, e.g., film, fact sheet, discussion	Schedule for Training (list dates)	Attendees
Used Oil Management			
Spent Solvent Management			
Disposal of Spent Abrasives			
Disposal of Vessel Wastewater			
Spill Prevention and Control			
Fueling Procedures			
General Good Housekeeping Practices			
Painting and Blasting Procedures			
Used Battery Management			

RECORD KEEPING AND INTERNAL REPORTING PROCEDURES		Element # 10 Completed by: _____ Title: _____ Date: _____	
Describe any spills or discharges from the marina (including stormwater discharges):			
Routine Inspections and Maintenance			
Source Area	Date Inspected	Pass/Fail	Description of Maintenance Activity

NON-STORMWATER DISCHARGES

Element # 11

Completed by: _____

Title: _____

Date: _____

This item is generally not applicable to marinas. If you have waste water discharges from sources other than those related to vessel maintenance or stormwater runoff, the discharge must be tested.

If testing is necessary (see above), contact an environmental consultant. The testing certification must include:

- Identification of potential significant sources of non-stormwater on site
- Results of test/evaluation for the presence of non-stormwater discharges
- Evaluation criteria used
- Date of testing
- On site drainage points that were directly observed during testing

SEDIMENT AND EROSION CONTROL

Element # 12

Completed by: _____

Title: _____

Date: _____

Instructions: Only necessary if there is on-going sedimentation due to activities such as construction or landscaping or the presence of unpaved roads or lots.

Identify areas which have high potential for significant soil erosion.

Describe measures in place (e.g. structural, vegetative) to reduce pollutants from stormwater discharges.

1.

2.

3.

4.

5.

**ANNUAL COMPREHENSIVE
SITE COMPLIANCE
EVALUATION**

Element # 13

Completed by: _____

Title: _____

Date: _____

Instructions: Keep records of an annual site inspection conducted by the marina manager or designated team member. During the inspection verify that the description of potential pollutant sources is accurate, the site map reflects current conditions, and the pollution control measures are being implemented and are adequate.

Date	Name of Inspector	Is description of potential pollutants accurate (see Worksheet #2)? If 'No,' note necessary changes.	Is site map accurate? If 'No,' note necessary changes.	Are the existing pollution control measures adequate (see Worksheet # 8 a-b-d)? If 'No,' note necessary changes.

CONSISTENCY WITH OTHER PLANS	Element # 14 Completed by: _____ Title: _____ Date: _____	
Instructions: Ensure that elements of this Storm Water Pollution Prevention (SWPP) plan are consistent with any other plans required for the facility such as a Spill Prevention, Control and Countermeasure (SPCC) plan.		
Other plan required for marina	Consistent with SWPP plan?	Recommendations for Consistency

SPECIAL REQUIREMENTS FOR STORMWATER DISCHARGES TO MUNICIPAL SEPARATE STORMSEWER SYSTEMS PERMITTED BY MDE.	Element # 15 Completed by: _____ Title: _____ Date: _____	
Generally not applicable to marinas. Required only if your stormwater feeds into a sewer system which carries the water to a wastewater treatment plant (the runoff from most marinas goes directly into adjacent waterways). If you discharge stormwater to a sewer system, you must be in compliance with requirements of State/NPDES permits issued to the wastewater treatment plant. Contact the wastewater treatment plant operator directly for information.		

SALT STORAGE AT FACILITIES LOCATED ON FRESHWATER	Element # 16 Completed by: _____ Title: _____ Date: _____
<p>Generally not applicable to marinas. For facilities located along fresh waters of the State, storage piles of salt used for deicing or other purposes must be enclosed or covered to prevent exposure to precipitation.</p>	

REQUIRED SIGNATURES

Instructions: Make sure the correct individual from your organization signs and dates this plan.

- Corporate officer for a corporation
- General partner for a partnership
- Proprietor for a sole proprietorship
- Principal executive officer or ranking elected official if municipal, state, federal or other public agency.

Signature: _____

Print Name: _____

Title: _____

Date: _____